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ABSTRACT

A study examined the process by which parents and other individuals influence the educational and occupational plans of male high school sophomores. (A companion document, CE 016 578, reports similar findings for female high school sophomores.) Two causal models were studied: the first model employed as a measure of significant other influence the perceived encouragement toward advanced education (i.e. college) from parents and teachers, and the second model used the achievement expectations held for a student by individuals named by that student as significant others. Data were collected from a sample of 247 subjects, the subjects' parents, and individuals identified by the subjects as having been influential in affecting their educational and occupational career plans. The major findings were as follow: (1) both black and white youth identified similar numbers of significant others for their career decisions, and those listed tended to be of the same race as the respondents; (2) familial network provided the majority of significant others for both groups; and (3) extended family members were generally of greater importance for blacks than whites. Through statistical analysis of the data, a model (with variations) of career decision making was developed which has implications for career guidance. The researchers concluded that the "disaggregated objective significant other influence model" represented the optimum explanation of the formation of career plans in terms of the data analyzed, and implications for theory and measurement were presented according to the findings of this model. (Detailed descriptions of the sample, statistical analyses, and instrumentation are appended.) (BM)

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Research and Development Series No. 107

Significant Other Influence and Career Decisions:
Volume I
Black and White Male Urban Youth

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- Installing educational programs and products
- Operating information systems and services
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FOREWORD

This report is Volume I of a two-volume report of research on the process by which parents and other individuals influence the educational and occupational plans of young people. Volume I reports findings for high school, sophomore males. Volume II reports findings for high school, sophomore females. Volume I is essentially a "stand alone" document. This effort reflects the concern of The Center for Vocational Education for basic research relevant to vocational education.

We wish to express our appreciation to the high school principals and school board staff members of the Columbus Public School System. Their assistance and cooperation during the instrument refinement and data gathering phases were significant contributions to the research effort. The advice and consultation of T. Michael Carter, Arthur G. Cosby, Archibald O. Haller, and Joseph Woelfel during the formative stages of the research, helped to shape its final outcome. To them we offer our gratitude. Additionally, many scholars contributed in varying degrees to this effort. Their contributions individually and collectively are appreciated. In particular, the leadership of the original principal investigator, J. Steven Picou, is acknowledged.

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Robert E. Taylor
Director
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NONTECHNICAL SUMMARY OF VOLUME I

This research begins with the assumption, based on theory and research, that the most important predictors of educational and occupational achievement of youth are their educational and occupational expectations. The focus of the research is the identification of the impact of the influence exerted by parents and others (collectively, significant others) on those expectations. Although the effort is one of basic research, it seeks to provide information which may lead to development of new career guidance techniques.

A sample of some 250 respondents, approximately balanced by race, was selected from public high schools in Columbus, Ohio. Respondents were interviewed once during their sophomore year in school. In addition to the primary sample of students, all parents of students and an average of about four additional significant others named by each student were contacted for information.

All students in the sample were asked to list individuals who they believed had influenced their occupational and educational expectations. Analysis of these lists revealed the following important points: (1) Parents were selected as significant others by an overwhelming majority of students, most nonparents who were selected were members of the immediate or extended families of the students, and school personnel were infrequently selected. These observations held within levels of father's education and mother's education. (2) For black and for white youth, the average number of significant others selected is approximately equal. (3) Youth of each race are much more likely to choose significant others of the same race than they are to select significant others of a different race.

Statistical analyses were selected to identify the effects of several variables on career expectations. An important aspect of this study is that it is among the first to measure significant other influence both in terms of significant others' expectations for students and in terms of students' perception of significant others' encouragement. Significant other influence, when measured by the expectations for students reported by significant others, had the strongest direct effect on students' expectations, produced the most accurate estimates of students' expectations, and reduced the effects of socioeconomic status, measured I.Q., and acadmic performance more than does significant other influence measured by students' perception of significant other encouragement. The

analyses also demonstrated that students' educational expectations can be estimated more accurately than their occupational expectations. Finally, the estimation of black students' expectations is consistently less accurate than the estimation of white students' expectations.

Any inferences for application must be made with caution in this area of research. There are enough unresolved issues that it will be some time before definitive implications for career guidance will be forthcoming. However, the current findings imply the need for parent and community involvement in the career guidance programs of schools.

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CHAPTER I

Introduction

The Field of Study: An Overview

During the last twenty-five years, sociologists and social scientists have compiled a large amount of research on the career decision-making and career attainment processes in American society. The sheer magnitude of this effort is reflected in the publication of several excellent research bibliographies. For example, Kuvlesky and Reynolds recently listed 818 citations in this general area (Kuvlesky and Reynolds, 1970A; 1970B; 1970C). Several detailed annotated bibliographies have been produced, one on studies of black youth (Kuvlesky and Lever, 1967) and one on studies of rural Southern youth (Cosby, et al., 1974). Furthermore, at least two other bibliographic compositions are worthy of mention. Goldstein's (1967) critical literature review of studies on urban poverty youth contains commentary on many studies on career orientations, while Glenn, et al. (1970) have produced a massive listing[1] of relevant research in the general area of social stratification.

At this point the question could be raised, "What is the basis and significance of this obvious publication explosion?" From a theoretical perspective, one can contend that social theorists antedating Plato through Marx, Sorokin and many contemporary scholars have speculated about the nature and meaning of social stratification and class relationships in society. Germane to such theoretical efforts were considerations of the basis of inequality and the patterns of social mobility which characterize all stratified societies. So although the "publication explosion" noted above appears to be a recent phenomenon, the underlying theoretical issues involved have persisted through time in the works of major social theorists and philosophers.

The more recent research efforts in this area reflect an effort by social scientists to impact upon a variety of issues stemming from a "social problems" concern. Several different lines of empirical inquiry, related but independently initiated, have begun to merge in recent years (Haller, Woelfel with Fink, 1969, Chapter 1). Specifically, rural sociologists, sensitized by early findings and contentions of Lipset (1955), began to investigate the occupational placement problems experienced by rural youth in an increasingly urbanized society. In his secondary analysis of data collected in the Oakland Mobility Study of 1949-50, Lipset found that there were "significant differences between the size of community in which the respondent spent his most important pre-employment years and his later job career" (Lipset, 1955: 221). In attempting to explain the observed relationships between occupational attainment and community of orientation, Lipset stated:

> Lower aspiration levels derived from their immediate class and community environment probably result in lower-class, small-town or rural youth being less likely to try to obtain the education or skills which will permit them to be successfully upward mobile (Lipset, 1955: 226-227).

Early research findings stemming from Lipset's thesis generally reinforced his contentions (Youmans, 1956; Grigg and Middleton, 1960). However, the lower aspiration levels of rural youth were found to be mainly a function of a consistent subsample of rural males who planned to enter farming as a future vocation. When adequate controls for the "plan to farm" variable were introduced, the rural-urban differences in level of aspiration were found to be nonexistent (Haller and Sewell, 1957; Haller, 1960).

Another strand of research, more social psychological in orientation, developed out of several early works of scholars from Harvard University (Kahl, 1953; Cohen, 1958; Bordua, 1960; Shea, 1964). The central concern of this research effort was the social psychology of social mobility, and studies were done to isolate sources of interpersonal influence and motivational factors which were related to the formation of adolescents' career orientations. Bordua's (1960) early research, in particular, pointed out that parents' expectations for their childrens' educational future intervened between social origins and the formation of adolescents' educational aspirations.

In addition to these two research directions, a third line of inquiry has emerged from social mobility studies, which in its development has synthesized and expanded the literature in the general areas of career choice and attainment. As Blau and Duncan (1967: 7-10) point out, social mobility research was hampered by the fact that traditional mobility tables did not consider any variables other than social origins and attainments. The resulting "index of association" or "social distance mobility ratio" was inadequate for providing any causal explanation for mobility at the individual level (Rogoff, 1953; Glass, 1954). This inadequacy is documented and addressed in Duncan (1966A) and Blau and Duncan (1967). As the movement away from traditional mobility scores emerged, a concomitant change in the theoretical framework for mobility studies was generated. Carter and Carter (1971: 12) note this methodological and theoretical shift in the following manner:

> Whereas sociologists were once concerned with the societal-level process by which a vector of origin social states was transformed into a vector of current social states, we are now concerned with the individual level process by which a person's current social state is generated. Whereas sociologists were once content to merely describe the form of the societal-level process, we now feel compelled to describe in detail how the individual-level process operates through various intervening variables. Whereas sociologists were once concerned with the amount of intergenerational social mobility observed, we are now concerned with the social mechanisms affecting the attainment of social status, irrespective of any mobility involved.

This shift in interest in mobility research, coupled with increasing interest in the methodological issues involved in these studies, led mobility scholars to consider regression and path analysis techniques (Duncan and Hodge, 1963; Duncan, 1966B). A "structural" model of the status attainment process was developed out of these trends (Blau and Duncan, 1967).[2] This model, referred to as the "Blau-Duncan Model," contained five variables. Basically, it focused upon the process of status transmission from fathers' social origins to sons' social origins (Haller and Portes, 1973). The major finding from the Blau-Duncan Model was that social origins of parents primarily influence occupational attainment indirectly via educational attainment (Blau and Duncan, 1967: 170).

From this base, a more complex causal model of the status attainment process was developed and analyzed by Sewell and his associates. This model is social psychological in orientation and has been specified as the "Wisconsin Model" of status attainment (Haller and Portes, 1973). Essentially, the Wisconsin Model expands the Blau-Duncan effort by more carefully specifying social psychological variables which intervene between social origins and early educational and occupational attainments (Sewell, Haller, and Portes, 1969; Sewell, Haller, and Ohlendorf, 1970; Hauser, 1972; Sewell and Hauser, 1972). In contrast to the one-step status transmission process delineated by the Blau-Duncan Model, the Wisconsin Model entails a three-step transmission process. First, social origins and mental ability are presented as affecting performance in school. In turn, these variables are considered to influence the amount of encouragement to attend college the students perceive from parents, teachers, and peers (significant other influence). Significant other influence is assumed to affect both educational and occupational aspirations and these variables impact upon career attainments (Sewell, Haller, and Portes, 1969).

From the Wisconsin Model, we find that significant other influence has substantial effects on aspiration-formation and early educational attainment and that aspirations have important effects on attainments (Sewell, Haller, and Portes, 1969; Sewell, Haller, and Ohlendorf, 1970). More detailed considerations of these models will be presented in a later chapter. At this point it is of interest to note that with the development of the Wisconsin Model, previous research efforts on aspirations and interpersonal influence took on added significance.[3]

Although some debate existed in the research literature concerning the importance of adolescents' career aspirations for subsequent attainments (Kuvlesky and Bealer, 1967), the findings of Sewell and his associates suggested that aspirations are important determinants of eventual career placement. Haller, Woelfel with Fink (1969: 5) comment on this relationship in the following manner:

> It is safe to say that the evidence of an important relationship between educational and occupational aspirations and educational and occupational attainments is substantial.

Thus, the significance of aspiration research lies in the fact that the aspirations a youth holds for future career achievements are an important part of the overall process of status attainment.

The social-psychological studies on interpersonal influence become important because this variable is a strong predictor of aspirations and early educational attainment. As such, it is a variable which has some potential for utilization by "change agents" who are interested in impacting on the career behavior of "disadvantaged" youth. Sewell, Haller, and Portes (1969: 89-90) note the practical potential of this variable as follows:

> Besides being a powerful explanatory factor, significant others' influence should be amenable to manipulation. It thus suggests itself as a point at which external agents might intervene to change educational and occupational attainment levels . . . There may well be a substantial payoff from more refined work with this variable.

The value of significant other influence in the Wisconsin Model has been criticized because the measurement procedures depend on asking youth to indicate their perceptions of the attitudes and behaviors of their significant others rather than asking the significant others directly (Haller, Woelfel with Fink, 1969; Jencks, 1972: 140, 163). This criticism stimulated development of the Wisconsin Significant Other Battery, abbreviated to WISOB (Haller, Woelfel with Fink, 1969). The central feature to the WISOB is that significant others are questioned directly regarding their expectations for ego, but several other refinements are also incorporated into the instrument: (1) Youth are asked to list their significant others in an open-ended format. Previous measurements had depended on predetermined lists of categories of persons, e.g., parents, teachers, etc. (2) Significant others are asked to indicate their expectations and aspirations for ego rather than the level of encouragement to attend college, as had been done in the research by Sewell and associates. (3) A fourfold conceptual distinction was built into the measurement procedures; distinctions were made between significant others who are definers for object, definers for self, models for self and models for object. Significant other definers are persons who influence ego by telling ego directly what he would like to see ego do or think. Significant other models are persons who influence ego by example. Significant others for self influence the self concept of ego; whereas, significant others for object influence ego's view of objects, ideas, etc., external to self. Haller and Woelfel (1972) argue that the WISOB is an efficient instrument for detecting significant others and measuring their expectations for ego.

> The WISOB as a unit validly, reliably, and economically detects and measures the patterns of contemporary educational and occupational interpersonal influence for any person . . . significant other influence, as detected and measured by WISOB, appear to be an important variable influencing the educational and occupational aspirations of high school students (Haller and Woelfel, 1972: 617).

Empirical research using the WISOB in place of the operational criteria used by Sewell and associates tends to confirm the conclusions offered by Sewell and associates (Haller, Woelfel with Fink, 1969; Woelfel and Haller, 1971; Haller and Woelfel, 1972).

For example, Woelfel and Haller, report a zero-order correlation of .66 between students' educational aspirations and significant others' mean educational expectations and a zero-order correlation of .64 between students' occupational aspirations and significant others' mean occupational expectations (Woelfel and Haller, 1971: 81). These findings are extremely important because the theory and measurement procedures employed by Woelfel and Haller (1971) appear to be less subject to criticisms and provide a more accurate measure of the relationship between significant other influence and students' career aspirations than do previous measurement procedures.

In summary, we have noted that the recent publication explosion in the general areas of career choice and career attainment has resulted from several lines of systematic empirical inquiry. The development of the Wisconsin Model of status attainment provided a synthesis of these research strands, integrating aspiration and interpersonal influence research into a model of educational and occupational achievements. More recently, interest has focused on refined measurement of one variable in the Wisconsin Model -- significant other influence. Research indicates that this variable has considerable theoretical and practical potential as a mechanism change agents may "utilize" to enhance the career achievement of "disadvantaged" Americans. However, several crucial research questions still exist with regard to the significant other influence variable. First, we only have limited data sets which have utilized the WISOB. This fact suggests that future studies need to be conducted in order to assess the generalizability of previous findings. Second, the potential for future development programs, employing significant other influence as a manipulated variable, needs to be assessed. The fact that no data currently exist on minority youth points to the need for empirical studies on the dynamics of significant other influence for these groups. The achievements of past research efforts by rural sociologists, social psychologists, and sociologists interested in social mobility provide the starting point for this study.

Specifically, this research takes as its point of departure the question, "What is the role of significant other influence in the career decision-making process of black and white high school sophomore males?". The question is addressed through analyses of who are the significant others named by a sample of black and white high school sophomores followed by examination of alternative causal models of the career decision-making process.

Outline of the Study

This report consists of six chapters. In this chapter, we have provided a concise overview of the general area of study under investigation. Chapter II is devoted to a review of the issues and specification of the causal models to be estimated in this research. Chapter III contains the methodological procedures employed in this investigation. Chapters IV and V contain the analysis of the data. The analysis in Chapter IV is primarily descriptive in nature, while Chapter V presents the development and analysis of alternative causal models utilizing path analytic techniques. Chapter VI presents a summary and interpretation of the results of the data analysis along with suggestions for future theoretical and empirical inquiry.

FOOTNOTES

[1] Many literature reviews exist on specific topics in this general area. For more detailed information the reader should consult the following sources: Haller and Miller, 1963; Picou, 1969; Cosby, 1969; Crites, 1969; Picou and Curry, 1969; Haller and Woelfel, 1972; and Haller and Portes, 1973.

[2] By status attainment we specifically refer to "those sets of events by which individuals come to occupy their positions in the social hierarchies of wealth, power, and prestige" (Haller and Portes, 1973: 54).

[3] The theoretical utility of studying career behavior aspirations became more focused in terms of assessing the role of such variables (aspirations) for explicating the process of career achievements.

CHAPTER II

The Models: Issues and Specifications

Summary Review of Literature

Introduction

The focus of the research reported herein is both narrow and specific. However, the intellectual tradition out of which it has grown is broad and interdisciplinary in scope. While a review of this body of theory and research would add unduly to the length of this document, such a review is available to the interested reader.[1] This chapter, on the other hand, will concentrate on the relatively recent and narrow line of research which most directly bears on the inquiry of this monograph.

This chapter is organized around the two causal models tested. The first is a model which employs perceived encouragement toward advanced education (i.e., college) from parents and teachers, and perceptions of friends', college plans as the measure of significant other influence. The second is a model which uses as the measure of significant other influence the achievement expectations held for a student by individuals named by that student as significant others. Operationalization of these variables are defined in Chapter III. Differences and similarities in the models will become clear in the ensuing discussion.

A Model Using Perceived Encouragement

The exogenous variables of this model are socioeconomic status and I.Q. as measured by the Henmon-Nelson I.Q. test (1942). These variables are also treated as exogenous in the model employing significant other expectations. The model is presented in general, ideal form in Figure 1.

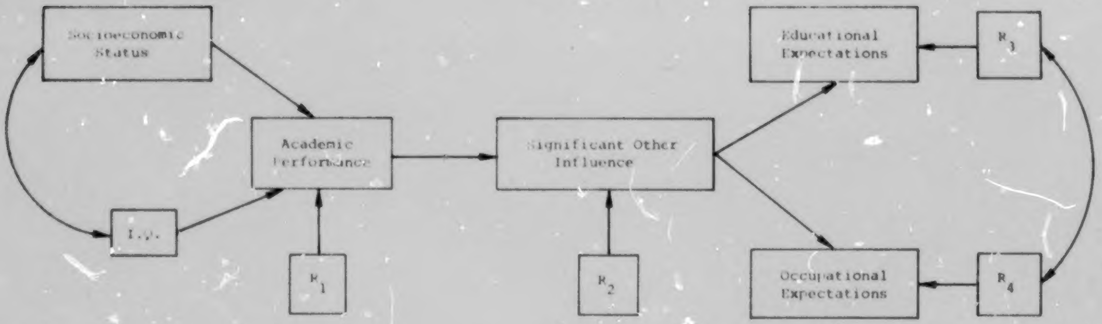


Figure 1: Heuristic Model of the Career Decision-Making Process Employing Perceived Encouragement as the Measure of Significant Other Influence.

The reader familiar with sociological literature will recognize the form of the model as the "Wisconsin Model" (Sewell and Shah, 1967; Sewell, Haller, and Ohlendorf, 1970; Sewell and Hauser, 1972). Although in actual analysis (see Chapter V) just identified models employing all unidirectional paths will be tested, the model depicted in Figure 1 represents the fundamental theoretical perspective guiding this inquiry. That is, endogenous variables are assumed to absorb effects of antecedent variables on subsequent variables. Since this model has, to some degree, evolved since its inception, the particular form at the model chosen should be justified.

The exogenous variable, socioeconomic status, has been used in such a model in both aggregate and disaggregate form. The argument for disaggregation has been grounded on the point that differential effects of different indicators of socioeconomic status have important theoretical and empirical implications (Sewell and Hauser, 1972). This research uses the variable in aggregate form. This choice reflects not so much a strong position in the aggregation versus disaggregation debate as it reflects the purpose of the inquiry. That is, the researchers are more interested in how the effect of socioeconomic status (as a whole) on career plans is moderated by significant other influence than in the detailed manner in which status effects those plans. However, in order to assure that gross distortion does not result from such an approach, some attention will be given to disaggregation in Chapter V.

The second exogenous variable in the model, I.Q., while not currently involved in debate as to its place in the specification of the model, requires consideration due to the nature of this research. That is, the investigation of the applicability of the model for black and white male high school students is a primary focus of the investigation. Because I.Q. tests including the Henmon-Nelson, have come under a great deal of criticism due to cultural bias, special considerations and assumptions are required for its use.

The first assumption is that the relative rank order of scores obtained by black males on the Hanmon-Nelson test is the same that they would have achieved on a test that is demonstrated to be unbiased. The second assumption is that the scale of differences in scores among black males on the Henmon-Nelson test represents essentially a linear transformation of the differences which would be obtained on a test demonstrated to be unbiased. The degree to which these assumptions are met represents the degree to which the effect estimates of I.Q. in the model for black male high school sophomores in the sample are unbiased.

The assumptions stated above being necessary to utilization of I.Q. scores in the research, certain considerations must be given to the conduct of the analysis of the model. The first is that under no circumstances should inferences be made on the basis of black/white I.Q. scores per se. The second is that any consideration of effects of I.Q. in the model analyzed for blacks and whites separately must be tempered by caution and any inferences derived therefrom must be taken as tentative only.

The specification of academic performance as the first intervening variable in the model reflects a degree of concensus concerning model specification. This is reflected in the work of Sewell, Haller, and Portes (1969), Sewell and Hauser (1972). Hauser (1792), Carter et al. (1972), Kerckhoff (1971), and Picou (1971) among others. References cited are not intended to establish model specification by fiat but to demonstrate that the logic of the model at this particular point has not been seriously challenged. The logic is simply that academic performance may be viewed as a consequence or function of one's intellectual abilities and socioeconomic origins. Much empirical evidence is cited by Lavin (1965) in his review of nexuses to academic performance which supports the logic stated above.

No serious challenge to the specification of significant other influence as caused by academic performance has been raised in the literature to date. Although the two variables could as easily be argued to be jointly dependent on each other, estimation of reciprocal effects in cross-sectional data becomes a bit sticky, both in terms of estimation of effects and and interpretation of data. As a result researchers to date have tended to follow Rosenburg's (1968) argument and specify the dominate direction of effect as the temporal sequence. Since in this model significant other influence is defined as perceived encouragement to attain education beyond the high school level, the assumption that the effect of academic performance on significant other influence represents the dominate direction of effect is intuitively appealing. Of course, such an assumption can only be documented using a longitudinal design.

A second issue of the significant other variable is that of aggregation versus disaggregation. As in the case of socioeconomic status this issue has been raised, particularly by Hauser (1972). Although the purpose of this inquiry, the investigation of significant other influence, clearly calls for the disaggregation of the variable, the model shall be estimated with the variable aggregated and disaggregated in order to better evaluate the model.[2]

The ultimate dependent variables are educational and occupational expectations of the young males. Most research to date, including that cited earlier, has not specified a causal sequence for these variables. Kerckhoff (1971), on the other hand, has suggested that occupational expectations should be treated as caused by educational expectations since one's educational achievement clearly serves to enhance or restrict one's occupational entry level. A counter argument to this position is that because one's educational achievement determines one's occupational entry level, individuals plan their educational achievement around the educational requirements of the occupation they expect to enter. This argument leads to an exactly opposite causal specification from that suggested by Kerckhoff. Still a third position might be taken arguing that both educational and occupational expectations are mutually adjusted according to the exigencies individuals perceive impinging on their life situation. The gist of this discussion is simply that a clear causal specification between educational and occupational expectations cannot be made *a priori*. Further, there does not currently exist empirical evidence supporting one of the three positions suggested above. Therefore, the authors have chosen not to specify a causal relationship between educational and occupational expectations but to look at the correlation between the residuals as shown in Figure 1.[3]

The model discussed above has been criticized by Jencks (1972) for its measurement of significant other influence. His criticism rests on the argument that to ask the individual about the encouragement received becomes a self-fulfilling prophecy. That is, individuals perceive the amount of encouragement they desire to receive. This criticism points out the need for evaluating a model in which the measure of significant other influence is independent of the individuals whose career plans are being studied. This is the intent of the second model to be considered in this research.

A Model Using Significant Other Expectations

This model shares in common many of the variables of the model discussed above. This includes the same exogenous variables and specifications of causal sequence through the variable academic performance. Therefore, the above discussion of those variables and the causal sequence to that point applies also to this model. The form and variables of this model are depicted in Figure 2. As in the case of the model presented earlier, a just identified recursize model will be estimated in actual analysis.

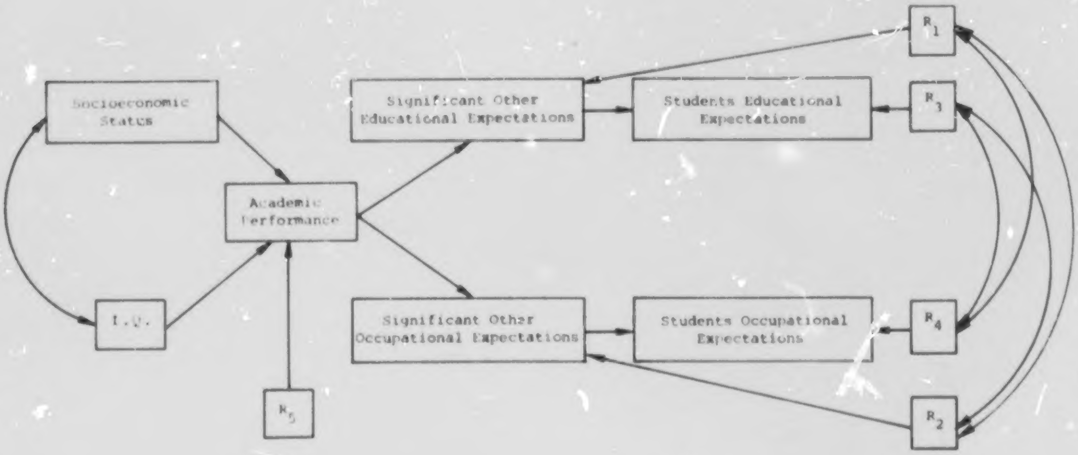

Socioeconomic Status
I.Q.
Academic Performance
R_5
Significant Other Educational Expectations
Students Educational Expectations
Significant Other Occupational Expectations
Students Occupational Expectations
R_1
R_3
R_4
R_2

Figure 2: Heuristic Model of the Career Decision-Making Process Employing Significant Others' Expectations of Students' Achievement as the Measure of Significant Other Influence.

Since the major difference between the models centers on the measures of significant other influence, the remainder of this discussion will concentrate on this variable and its place and specification in the model. The primary issues concern aggregation versus disaggregation of the significant other variable and recursive versus nonrecursive specification of the variable within the model. Each of these will be addressed in turn.

To iterate, the purpose of this investigation is to identify the role of significant other influence in the career decision-making of young people which implies the need to investigate the variable in disaggregated form. The analysis will estimate the model with the significant other variables aggregated and disaggregated. However, the degree of disaggregation is limited by a combination of the instrumentation employed to elicit significant others and conceptual specification. The instrumentation used to elicit significant others was open-ended, thereby failing to guarantee that each individual would name a significant other in each role relationship (e.g., parent, teacher, friend, etc.). The conceptual difficulty lies in how to treat cases where there are no significant others in a particular role relationship. While such a situation clearly implies absence of expectations, it is not apparent how to code the absence of expectations into the scales employed to measure significant others' expectations for the students. Lacking such coding specification, the researcher is forced to treat the absence of significant others in a particular role relationship as missing data. Extensive disaggregation of the significant other variables, therefore, is highly likely to result in extensive missing data and its attendant analytic problems. Consequently, disaggregation of the variables will be limited to parent and nonparent categories for both the educational and occupational expectations of significant others.

It is implied in Figure 1 and stated in the discussion above that only recursive models will be estimated. It must be noted that the probability is quite high that several reciprocal relationships may exist among the variables identified in the model depicted in Figure 2. This is the thrust of the argument of Woelfel and Haller (1971). The authors chose not to estimate such models due to difficulties both of data and interpretation of such results in cross-sectional data.

The data problem lies in the fact that a reciprocal relationship can be argued to exist between educational and occupational expectations of significant others who influence the educational and occupational plans of the young people, or among significant others who are part of the same interaction group but some are educational significant others, while the remainder are occupational significant others. Parents who influence both the educational and occupational plans of their offspring exemplify the former case. Two teachers in the same building, one of whom is an educational significant other, the other of whom is an occupational significant other, exemplifies the latter case. In the data collected, cases of individuals named as both educational and occupational significant others are readily identifiable. However, it is not possible to accurately identify which significant others interact with one another. Further, to attempt disaggregation into these categories (i.e., significant others for both educational and occupational plans, significant others for educational or occupational plans but who interact, and significant others for educational or occupational plans who do not interact) would introduce the missing data problem discussed earlier.

In addition, a case can be made for reciprocal effects between the career plans of individuals and the expectations held for them by significant others without entering into considerations delineated above. That is, it is not at all implausible to argue that not only are career plans adjusted to the expectations held by significant others but the expectations of significant others are adjusted to the career plans of the individual. Further, a clear choice between the above argument and the argument that there exists a one way effect from significant others' expectations to career plans cannot be made on an a priori basis.

Finally, statistical procedures exist which allow for the estimation of reciprocal effects in data such as was collected for this research, for example indirect least squares. However, such solutions require different assumptions, no more plausible than the assumptions of ordinary least squares. The authors have, therefore, chosen to use the more familiar least squares approach in recursive models. This is, in effect, the approach of specifying the dominate direction of effect (Rosenburg, 1968). Since this is necessarily a judgmental process it is subject to error. A final issue in the authors' choice against non-recursive models is the fact that while mathematics recognizes the infinitude of limits, human processes of cognition and behavior are apparently discrete. The interpretation of simultaneous reciprocal effects as must be estimated from cross-sectional data, therefore, tends to become strained. In short, the time required for the student and significant others to mutually influence one anothers' expectations is greater than can be reflected in estimation of reciprocal effects from cross-sectional data.

The ultimate dependent variables of this model have been discussed earlier in this chapter. However, a final observation is necessary. The differences in the models presented herein differ more in the measurement of the significant other variable than in the specification of the models. The importance of the analysis lies in the fact that this represents the first research of which the authors are aware that tests the relative contribution of the alternative measures to the formation of career plans from a single data base.

Additional Comments

The reader will have noted by this point that the terms career plans and educational and occupational expectations have been used interchangeably. This reflects the fact that the instrument used to elicit expectation of the students asks them to indicate the achievement they expect taking into account the full range of exigencies surrounding their life situation. The response to such a question, in the judgment of the authors, reflects future plans. Given that the specific content of the questions centers on educational and occupational achievement, the responses reflect career plans.

The discussion has referred to the fact that the models will be estimated for black and white male high school sophomores separately. However, no suggestions as to differences which may obtain have been made. This reflects the fact that the state of both theory and research are not such as to yield specific hypothesis of differences or similarities. To the degree that the argument of Yancy, Rigsby, and McCarthy (1972) is correct, one would not expect major differences in models which seek to identify process. The question of differences, however, remains primarily an empirical one.

FOOTNOTES

[1] See for example Crites (1969) which focuses primarily on psychological research, Picou, Curry, and Hotchkiss (1976) which attempts to synthesize much work from several disciplines and Sewell (1975) which focuses specifically on models of status attainment. Additionally, several references, not specifically cited herein, are provided in the bibliography for the reader desiring to gain greater familiarity with this area.

[2] There has been something of a polarization, at least in sociological research, between evaluation of models on the basis of explained variance or absorption of antecedent effects. The authors take the position that neither of these should serve as the sole criterion for evaluating a model. Clearly, a model where all antecendent effects are absorbed by endogenous variables but the explained variance of the ultimate dependent variable is substantively unimportant is not a significant model. On the other hand, a model with great explained variance in the ultimate dependent variable but no absorption of effects by the endogenous variables is nothing more than a traditional regression model. In short, the lack of predictive accuracy provides no basis for trusting the model while the lack of absorption of effects provides no basis for understanding process. On the other hand, since there are no optimizing agorithms for these two criteria the process of using both in evaluating models becomes somewhat subjective.

[3] See Chapter III for a discussion of the implications of correlated residuals.

CHAPTER III

Methodological Procedures

Introduction

This chapter provides an overview of the methodological procedures employed in this study and is divided into four major sections: (1) the development of the sample; (2) the identification, selection, and development of variable instrumentation and operationalization; (3) the data collection procedures; and (4) the analytic procedures utilized to define and describe relationships which the research sought to explore.

The Sample

A sampling design was chosen to yield a balanced sample by race. The strategy for selecting the sample was to treat each of the twelve schools which participated in the study as a strata and to randomly select subsamples within race (black and white) from each school. However, subsamples from each racial group were selected only wherever the racial composition of a school was such as to allow sampling of both black and white students. Three of the participating schools had too few blacks to sample and one had too few whites.

The selection of a sample balanced by race allows direct comparison of relationships between variables for each group and permits rigorous tests of the differences in these relationships to be conducted. Furthermore, any differences identified should be due to differences of "effect" and not to differences in numbers which may have resulted had a simple random sample been chosen. However, by deciding to utilize a racially balanced sample, it was not possible to have a "representative" sample in which the proportionality of blacks and whites within the sample reflected the proportionality of these racial groups within the population. The potential impact of this decision is assessed later in the discusion.

During the period of sample selection, the public schools were operating under guidelines that forbade identifying individual children by race in school records. This policy created obstacles to obtaining a sample balanced by race. The problems were dealt with by identifying all sophomore males within each of the high schools participating in the study. Then a table of random numbers was generated (on the basis of the number of males in the sophomore class of each high school) employing a Monte Carlo technique. A subsample was then selected using the appropriate table of random numbers from each race-school group.

Approximately twice as many students as were required for the sample were selected. As students were selected, they were numbered from the first student selected to the last. Having compiled a list of potential subjects for each school the staff went to the children involved in the study. Once this procedure was completed the proper subsamples of each racial group of youth for each school were selected from among youth first encountered in the original list. After identifying this primary sample for each school, consent forms were mailed to the parents of the selected youth. If parental consent was granted, the child was confirmed as a subject in the sample. In the relatively few cases where individual parents did not choose to allow their child to participate in the study, the remaining subjects initially identified were employed as a back-up sample so that the primary sample, upon the initiation of data collection, approximated the size that had been initially specified. The target number for the total sample was 300 subjects; 150 black and 150 white.

In order to test the representativeness of the sample, the distribution of selected demographic characteristics of the sample students' parents[1] was compared to the census, matching as closely as possible in terms of age, marital status, race, and family compositions. Comparisons were conducted for the Columbus metropolitan area; the Columbus SMSA, Franklin County, Ohio; North Central Census Region SMSA's and SMSA's across the country.[2]

The result of this comparison cannot be construed to indicate that the sample selection is representative in any rigorous sense of that term. Three limitations are indicated here as exemplary of this fact. One, as previously noted, is a disproportionate number of blacks included in the sample. Secondly, the sample was selected from a single city in the Midwest and, therefore, cannot be used as a basis of rigorous generalization to the entire United States. A third limitation on representativeness of the sample is the sample size. After attrition it was constituted of 247 primary subjects (117 blacks and 130 whites).[3] On the other hand, the comparisons to the census data (for details of this analysis see Appendix C of this report) warrants the conclusion that the discrepancies between the sample and the population figures are well within margins which may be attributed to sampling error. This suggests that (1) no systematic bias has been introduced into the relationships which the research is attempting to measure, and (2) that the relationships observed within the subsamples of black and white youth are likely to be very much like the relationships observed for any similar sample drawn from another SMSA within the country.

Instrumentation and Operationalization

The selection of variables and the choice of instrumentation and operationalization were limited by the primary objective of the research (i.e., identifying the sources of interpersonal influence that impact on the career decision-making process of high school youth). This objective and the time and funding constraints placed on the research precluded extensive measurement work. Therefore, the variables selected for inclusion in this study were drawn from the pool of variables which have been identified as related to the career decision-making process by research reported in professional social science literature. As with the selection of variables, instrumentation to tap those variables selected was based on the best possible operationalization for a particular variable, reported in the professional literature of this research area.

A detailed discussion of each of the variables is impossible in a report of this nature. However, Appendix C contains the operational definitions of the variables used in the models reported in Chapter V and the frequency tables in Chapter IV. Also included in Appendix C are the descriptive statistics of all the variables used in the models reported in Chapter V. The operational measures of the variables generally follow accepted conventions and are referenced to the original sources. The items used in the operationalizations are found in Appendix D. The items corresponding to each variable are referenced in the discussion of the variables in Appendix C to enable the reader to go from the instrument items to the constructed variables. The variables used in the report are listed below with their appropriate mnemonics.

VARIABLE LIST AND MNEMONICS

1. Sibling Order (SIBO)
2. Father's Education (son's report) (FES)
3. Mother's Education (son's report) (MES)
4. Number of Siblings (FS)
5. Family Type (FT)
6. College peer plans (PP)
7. Occupational aspiration scale for son (OAS)
8. Son's occupation information (STOI)
9. Son's occupational fantasy choice (OF)
10. Son's occupational aspirations (OA)
11. Son's occupational expectations (OE)
12. Son's educational fantasy choice (EF)

13 Son's educational aspirations (EA)
14 Son's educational expectations (EE)
15 Perceived teacher's educational encouragement (TEE)
16 Father's occupation (FO)
17 Father's education (FE)
18 Father's occupational information (FOI)
19 Mother's education (ME)
20 Mother's occupational information (MOI)
21 I.Q. (MA)
22 EPPS Achievement motivation (AM)
23 Academic Performance (AP)
24 Mean parental occupation aspiration scale for son (OASP)
25 Mean parental educational aspirations for son (EAP)
26 Mean parental educational expectations for son (EEP)
27 Aggregated SES (SES)
28 Academic Self-concept (ASC)
29 I-E personal control (IEP)
30 I-E ideal control (IEI)
31 Goal impedance - Internal (GII)
32 Goal impedance - External (GIE)
33 Educational Values (EV)
34 Self-esteem (SE)
35 Perceived parental educational encouragement (PEE)
36 Total perceived educational encouragement (PSOI)
37 Non-parental significant other's educational aspirations for ego (EANP)
38 Non-parental significant others' educational expectations for ego (EENP)
39 Non-parental significant others' occupational aspiration scale for ego (OASNP)
40 Aggregated significant others' educational aspirations for ego (SOEA)
41 Aggregated significant others' educational expectations for ego (SOIE)
42 Aggregated significant others' occupational aspiration scale for ego (SOIO)
43 Race of significant other (RSO)
44 Relationship of significant other to student (REL)
45 Data availability from significant others (DAV)

Prior to pilot studies and data collection, the instrumentation developed was submitted to a standard two-phase review within The Center for Vocational Education. The first phase constituted a technical clearance of instrumentation which was intended to insure that valid and reliable measuring instruments would be used in data collection. Upon completion of this stage, the instrumentation was submitted to Protection of Human Subjects review which was designed to screen out procedures that violated the civil liberties of respondents. Only after instrumentation had passed through these stages was the research prepared for piloting and data collection.

Several steps were taken to assure that the instrumentation used was appropriate to the sample selected. The first of these steps was to have staff members within The Center for Vocational Education review each instrument for clarity and readability at the high school sophomore level (See Appendix D for the structure of these instruments). Wording revisions which did not change content were made in response to the judgment of the program staff. The second step was the pilot study. Twenty subjects, twelve blacks and eight whites, were selected from a single high school. The questionnaires were administered to these subjects who were paid for their time. During the administration of the questionnaires the pilot subjects were interviewed extensively as to their response to the instrument. Probes consisted of inquiring about respondents' ability to understand what the items were eliciting and the degree to which the instruments "made sense." The administration of the questionnaires was structured so as to constitute a simulation of the actual interview situation. This was done so as to assess the degree to which the instruments could be administered to students within the time allotted.

Results of the first pilot indicated that the Wisconsin Significant Other Battery (WISOB), which had been employed to identify the students' significant others, required major revisions. Students participating indicated confusion and a sense of undue repetition in the original form of the questionnaire. Therefore, the original battery was revised.

In the original questionnaire, respondents were asked to make a listing of persons whom they judged to be their significant others in each of four modes of influence, i.e., definer for self, definer for object, model for self, model for object. The procedure was carried out once with regard to educational plans and once with regard to occupational plans. Hence, a total of eight separate listings were requested from each respondent. Since the names in the different lists tended to overlap, participants in the pilot study viewed the task as laborious. In the revised version, therefore, only two listings of significant others for educational plans and occupational plans were requested--one listing for SO's who were definers and one listing for SO's who were models. Thus, the number of listings was cut to four. Respondents were then asked to characterize significant others appearing on each listing according to degree of impact on ego's view of self and on ego's view of object. Following the revision of the WISOB and minor revisions of other instruments involved in the study, a second pilot study was conducted. Administration of the questionnaires in the second pilot indicated a much improved response to the instrumentation. This conclusion was supported by the overall reactions of respondents in the second pilot study. As a result of the second pilot, the instrumentation was judged to be appropriate to administer to high school sophomores.

Data Collection

Data collection proceeded in three phases: (1) collection of data from the subjects identified as part of the primary sample, (2) collection of data from parents of the subjects, and (3) collection of data from individuals identified by the subjects as having been influential in affecting their educational and occupational career plans. In the first phase, all of the students sampled in a single school were surveyed as a group in two, four hour sessions in what we have chosen to call a "quasi-group interview." The choice of terms is deliberate in that while students were brought together as a group and given questionnaires to complete, an interview team was constantly available to the participants during the period of questionnaire completion. This provided nearly constant interaction with each of the students, both in terms of monitoring the way students were responding and of answering questions from respondents who did not understand specific items. Two exceptions to this procedure were maintained during the conduct of data collection in phase one. The first of these exceptions was in the administration of the Henmon-Nelson intelligence test and the second was in the administration of the Edwards Personal Preference Schedule. These exceptions were made because both of these instruments are standardized schedules requiring unassisted responses.

Several steps were taken to assure the integrity of responses to the questionnaires. First, each subject was paid $6.00 for participating in the study. Second, the racial composition of the interview team was matched to the racial balance of the group of students being interviewed in order to promote rapport between the interview team and the students. To further assure this rapport, all members of the interview team rotated in assuming positions of leadership and initiative in the conduct of the interviews. Finally, a briefing period was conducted at the initiation of the interview process to inform the students of the purposes and objectives of the research, to emphasize the importance of their honest responses to questions, and to inform them of the potential impact of the research findings on education. At the end of the second day's interview, students attended a debriefing session during which time they were allowed to ask any questions that they had concerning the research and to express any feelings that they had about the questionnaires. The response of the students in general was positive. The major complaint, although not greatly emphasized, was the length of questionnaire batteries. These "debriefing" sessions gave the research staff an informal "feeling" for the attitudes and feelings of the students toward the instruments.

The second phase of the data collection involved eliciting data from the parents of each of the participating students. This was accomplished initially by giving students packages containing questionnaires for their mothers and fathers at the end of the first day of interviewing. Those parents who were not able to complete the questionnaires on that evening were encouraged to complete them at their leisure and return them in the stamped, self-addressed envelope included for that purpose. Finally, those parents who had not responded by two weeks after they received the questionnaires were contacted by personal interviewers in a last attempt to gain completion of the parental questionnaires. This technique resulted in a relatively high response rate from parents. Table 1 indicates response rates of mothers and fathers by race.

Table 1: Response Rates of Parents, By Race

	Fathers	Mothers
Black	71.3%	90.5%
White	85.8%	95.5%
Total Parents		85.8%

The final data collection stage consisted of contacting those individuals named as significant others (such as parents, friends, teachers, other relatives, etc.) that the students indicated had influenced their educational and/or occupational plans. Of the 2503 significant others, 1784 individuals were mailed questionnaires appropriate to the area in which students indicated they had been influential. Attempts were made to contact by telephone those individuals who had not responded two weeks after the first mailout. The telephone interviews resulted in a considerable increase in the response rate. Finally, those individuals who had not responded to the mailed questionnaire and could not be contacted by phone were contacted by personal interviewers. The result of this procedure was that of all significant others contacted, 81 percent (1437/1784) responded to the questionnaires.

The remaining significant others who were not contacted were not known by the students. Of the 717 not contacted, 709 were solely listed as models (eight were listed both as models and definers). Basic demographic data (race, occupation, education, etc.) for the uncontacted models was easily obtained since the majority were well known public figures. Of the 709, the actual number of models for whom the information was obtained from secondary sources was considerably less than 70 percent because of repetition of individuals. For example, the President and other public figures were named by the students repeatedly. An estimate of about 100 different public figures yielded the 709 models who were not known by the students and who were public figures. Of those named as models, 367 individuals were known by the students and 274 of them responded to the questionnaire (74 percent) (367 + 709 = 1076 total models). Including the 717 individuals for whom information was taken from secondary sources, the overall response rate was 87 percent (2166/2503).

Methods of Data Analysis

Either implicitly or explicitly most scientific analyses of data are probably concerned with the discovery of "cause."[4] Yet, the search for causal relationships is an inherently difficult problem. The difficulty has its origins in the gap between theoretical thinking and research capabilities. While scientists think in terms of causes, in the sense of "forcing" or "producing," they can test only in terms of covariations. Thus, causal relationships can never be proved; rather, they can only be inferred from empirical findings.

Certain criteria are generally regarded as essential conditions for inferring a causal relationship between variables. First, the inference of causation requires that the dependent variable is related to or covaries with the independent variable. Secondly, an asymmetric relationship among variables is necessary.[5] The notion of an asymmetric relationship may be well specified by what Nagel (1961) has termed the "subjunctive conditional" relationship which may be stated as: if X were A, only then would X be B. The specification of asymmetry requires the ability to specify causal order among the variables and to eliminate other possible "causes." In the case of the former, the ordering may be obvious given the variables included (e.g., father's occupation and son's education) or it may be based upon logical arguments derived from theory. The latter requirement of elimination of other "causes" is directed at the ever-present possibility that an observed association between two variables occurs because they are both affected or "caused" by a common antecedent or collection of antecedents. Since in social research, experimental control of potentially "confounding" variables is virtually impossible, it is necessary to employ statistical "control" by considering several variables simultaneously.

However, it is unlikely, even with the institution of such controls, that all possible confounding variables have been eliminated. Therefore, it is necessary to postulate something about unknown factors which also influence the "dependent" variable of interest. Typically, one assumes that these additional variables are large in number, each with a small impact on the dependent variable, so that the overall effects tend to balance in such a way that the omitted variables as a group can be treated as random error.

In meeting these criteria, several procedures and methods of analysis may be used. For purposes of this report, two basic methods were utilized: (1) tabular presentations and (2) path analysis. The following discussion presents only issues associated with these methods as they are applied in this research.

The tabular analysis is employed in an exploratory analysis of the role relationships of the students to their significant others (Chapter IV). It must be noted here that two prime considerations limit strong inferences from data presented in Chapter IV. First, the tabular method of control is limited by the fact that, typically, one simply "runs out of cases" before all necessary controls can be considered simultaneously. Secondly, the observations are not independent since significant others were selected by members of the primary sample rather than at random. Consequently, routine statistical tests are not applied.

The decision to use path analysis[6] was influenced by two characteristics of the technique. The first is that the method of path analysis forces the researcher to explicitly formulate the set of relationships he wishes to investigate. The second is that the method is particularly suited to the investifation of process. Readers wishing to review or familiarize themselves with path analysis are referred to Appendix B where the method (pp B-1 - B-18) and assumptions (pp B-18 - B-25) of this method are discussed.

Final Note: Application of Path Analysis to Our Data

A final note on the application of path analysis in this research is necessary. It centers on the special problem of considering and comparing the applicability of models for blacks and whites.

Interpretation of path coefficients for two separate groups such as white and black racial groups presents some difficulty. If one wishes to compare coefficients within samples, standardized path coefficients are easier to interpret than "path-regression" coefficients because differences between coefficients due to arbitrary differences of scale have been removed from the standardized paths. Consider for example, a four-predicter model for the combined races with the dependent variable being the level of the son's educational expectation. Suppose that a measure of mental ability and three indicators of status origins compose the set of independent variables. Assume that the three status origin variables are the prestige of father's occupation, the level of father's education, and the level of mother's education. For blacks and whites combined, the unstandardized coefficient indexing the effect of father's occupational status on son's educational plans in this simple model is .016, whereas the analogous coefficient for the effect of father's education is .12. Apparently, father's education affects the son's educational plans by a magnitude about ten times greater than the effect of the status of father's occupation. Reflection on the measuring scale of occupational status and educational level, however, makes it clear that these differences are largely due to scale differences between occupational status and education. The measure of education ranges from one to fifteen; whereas the measure of status ranges from zero to ninety-six. Standardized path coefficients, on the other hand, are directly comparable since they are calculated on the assumption that all variables have been transformed to a common scale, one with a mean of zero and standard deviation of unity. For the present example, the standardized path coefficients for father's occupational status and father's education are .16 and .13 respectively. Thus, when scaling differences are removed, the status of the father's occupation actually has a somewhat stronger direct influence on the son's educational expectations than does the educational level of the father.

When comparisons of coefficients between subgroups are required in addition to comparisons between variables, path coefficients standardized within each sample are no longer satisfactory. Path coefficients can be interpreted as the degree of "change" in the dependent variable (ceteris paribus) for a change of one unit in the independent variable with which the coefficient is associated. Standardization within subsamples, however, means that one unit, say for blacks, is not the same distance on the scale as one unit for whites. Comparison of change across samples can only be made if each variable is measured on the same scale for both samples. Unstandardized path-regression coefficients can, therefore, be compared across samples.

We are now faced with a dilemma. If comparisons within subsamples of coefficients for different variables are desired, standardized path coefficients are easiest to interpret. If, on the other hand, comparisons between *subsamples* of coefficients for the *same variable* are needed, unstandardized coefficients must be used. In order to avoid duplicate presentations of data, standardized path-regression coefficients have been calculated for a standard scale which is *common* to both blacks and whites and to all variables.[10] Each variable was transformed so that its mean is zero and standard deviation unity *for the two racial groups combined*. Thus, the mean and standard deviation in each subgroup may not be zero and one, respectively, but when the two subsamples are combined, the overall mean is zero and the overall standard deviation is one. Comparisons of coefficients between variables are, therefore, straightforward because all variables are transformed to a common scale, but comparisons can also be made between subsamples because the scale is not changed in the transition between samples. In order to distinguish these coefficients from other path coefficients, they will be referred to as standardized path-regression coefficients throughout Chapter V.

FOOTNOTES

[1] Data was actually gathered from parents. This procedure is described in a later section.

[2] SMSA refers to the Standard Metropolitan Statistical Area. The term is defined in any volume of the summary census tables.

[3] Three respondents were eliminated due to inadequate responses to questionnaire items.

[4] It is outside the scope of this paper to give a detailed review of the controversy surrounding the concept of "cause." The reader is referred to any number of sources dealing with the meaning of cause, e.g., Cohen and Nagel, 1934; Simon, 1957; Bunge, 1959; Nagel, 1961; Blalock, 1964.

[5] See Rosenberg, 1968, for a readable discussion of asymmetric relationships.

[6] Detailed information regarding path analysis techniques can be found in Wright, 1918; Li, 1955; Duncan, 1966; Land, 1969; Heise, 1969; Boyle, 1970; Lyons and Carter, 1971; Blalock, 1972.

CHAPTER IV

Descriptive Analysis of Significant Others

Introduction

The vast majority of previous research on significant other influence in the career decision-making process has measured this influence in terms of *a priori* listings of general categories (such as parents, teachers, and peers). The "objective" significant other data gathered in this research did not utilize *a priori* categories and, therefore, provides a unique opportunity for specifying who the significant others are and the modes of influence within which they function. Such information should provide a basis for more accurately depicting the dynamics of the career decision-making process. The primary objective of this chapter is a descriptive analysis of the role relationships between significant others and students. Special attention will be directed toward the delineation of black-white differences in patterns of significant other influence. However, given the general dearth of information utilizing this type of data, the construction of any formal hypotheses regarding variations is precluded. Furtherfore, interpretation of the differences noted in the following discussion is limited by the fact that it was impossible to subject the findings to statistical tests of significance.[1] This latter point does not obviate the exploratory utility of considering apparent differences but it does require that any implications drawn be cautiously evaluated.

To facilitate discussion of the characteristics of significant others, the presentation is divided into four sections. Initially, consideration is given to the number of significant others identified. Second, attention is focused upon the racial characteristics of significant others *vis-a-vis* those of the students. The third section explores the major source of significant others. And the fourth section contains a brief summary of findings.

Numbers of Significant Others

Examination of the data regarding numbers of significant others revealed that for both black and white respondents in this study, numerous individuals constitute the interpersonal network affecting their career decisions. Table 1 reveals that there was a total of 2463 significant others identified by the students and that the number identified by youth within each racial group was similar. The mean number of significant others for white youth was found to be 10.09 while that for black youth was found to be 9.84. This calculation includes all significant others for both educational and occupational decisions (excluding multiple inclusion of persons identified as significant others in more than one mode of influence).

Table 1: Average Number of Significant Others, By Race*

Race	N	X	D**
Blacks (117)	1151	9.84	.25
Whites (130)	1312	10.09	
Total	2463		

* All significant others for educational and occupational aspirations.

** D = Difference between black and white means.

In Table 2, significant others were separated into two general reference categories -- educational and occupational. Educational significant others include all individuals listed as educational definers and models, while occupational significant others include all those listed as occupational definers and models. To interpret the calculations presented in Table 2, the reader is reminded that the same individual (significant other) may be included more than once within and between control categories.[2]

The results presented in Table 2 suggest that black youth have slightly more educational significant others, while white youth are characterized by more occupational significant others. These differences are rather small suggesting that both black and white youth identify similar numbers of educational and occupational significant others. These results for occupational significant others are similar to that reported by Woelfel (1972) for a sample of white male and female youth in Wisconsin.[3]

Table 2: Average Number of Significant Others for Educational and Occupational Aspirations by Race*

	EDUCATIONAL			OCCUPATIONAL		
RACE	N	$\bar{X}$	D**	N	$\bar{X}$	D***
BLACKS (117)	818	6.99	.44	658	5.62	.89
WHITES	845	6.45		853	6.51	
TOTALS	1663			1511		

* Includes significant others across all possible modes of influence.

** D = Difference between black and white means for educational significant others.

*** D = Difference between black and white means for occupational significant others.

Noting the similarity between the blacks and whites in terms of the average number of significant others, the question arises, does the average number of significant others vary appreciably by levels of parents' education when they are added as control variables. Table 3 presents the results of these analyses.

Differences remain relatively small both between race and between levels of parents' education.

Table 3: Average Number of Significant Others for Educational and Occupational Influence by Race and Parent's Education

Parents Level^A of Education		BLACK					WHITE			
		Education		Occupation			Education		Occupation	
		N	$\bar{X}$	N	$\bar{X}$		N	$\bar{X}$	N	$\bar{X}$
	Low (48)	322	(6.71)	254	(5.29)	Low (37)	214	(5.78)	203	(5.49)
Father	High (66)	470	(7.12)	389	(5.89)	High (94)	631	(6.71)	655	(6.97)
	Missing (3)	31	(10.33)	31	(10.33)	Missing (0)	0	(0)	0	(0)
Totals	(117)	823	(7.03)	674	(5.76)	(131)	845	(6.45)	858	(6.55)
	Low (49)	367	(7.49)	262	(5.35)	Low (40)	230	(5.75)	220	(5.50)
Mother	High (67)	442	(6.60)	388	(5.79)	High (91)	615	(6.76)	638	(7.01)
	Missing (1)	8	(8.00)	8	(8.00)	Missing (0)	0	(0)	0	(0)
Totals	(117)	818	(6.99)	658	(5.62)	(131)	845	(6.45)	853	(6.51)

[A] High parents' educational achievement was operationalized as high school degree or greater; low parents' educational achievement was operationalized as less than a high school degree.

Respondents (both black and white) from parents with high education consistently have a higher average number of significant others for both education and occupation. However, the differences, with only one exception overall, do not appear to be of sufficient magnitude to be of great import.

Several models were run with the number of significant others used as a dependent variable. Family type, family size, father's education, father's occupation, and mother's education were used as predictors of the number of significant others for both blacks and whites. The findings were not important enough to report in any detail; however, the results of the tables presented in this chapter are substantiated by the regression analysis. None of the independent variables used in the model for whites accounted for a significant amount of variation. For blacks, the SES variables were significant partial predictors but explained little of the variance in the number of significant others ($R^2 = .10$).

The classification variables chosen in this chapter do not function well in the capacity of showing systematic differences in the number of significant others. The primary result of this analysis was the discovery that other variables than those employed here would have to be utilized to explain the variation in the number of significant others named.

Racial Characteristics of Significant Others

In turning our attention to the racial characteristics of the educational and occupational significant others (Table 4), we find that, in general, significant others tend to reflect the racial status of the respondents. Eighty-one percent of all the significant others listed by black youth were found to be black, while 95 percent of those listed by white youth were found to be white.

Table 4: Racial Characteristics of Significant Others*

	Race of Ego (Subject)	
Race of Significant Others	Blacks	Whites
Blacks	81%	5%
Whites	19%	95%
Total	100%	100%

* Percentage calculations are based upon all significant others listed by respondents for whom race has been identified. There are two situations where race was not identified: (1) the significant other failed to respond to the total questionnaire, or (2) the significant other refused to give his race. The inability to identify race results in a decrease in the number of

significant others available for consideration in this table as compared to the number reported in Table 1.

In order to clarify and further specify these results, it is necessary to examine the role relationships of significant others to the respondents classified by race of the significant others (Tables 5 and 6).[4] Of particular interest is the discernment of the role relationships between white youth and black significant others and those between black youth and white significant others.

For whites (Table 5), it is found that of the nineteen black significant others listed, ten (56 percent) are located within the educational institution, i.e., teachers or guidance counselors.[5] However, these individuals constitute only 7 percent of all teachers and 10 percent of all guidance counselors listed by whites.

Table 5: Relationship of Significant Others to White Respondents by Racial Identity of Significant Others

	Race of Significant Others		
Relationship	Black (N=19) %	White (N=847) %	Total (N=866) %
Family Members Other Relatives[A]	0	100	100 (509)
Peer Friends (Males)	3	97	100 (68)
Peer Friends (Females)	9	91	100 (11)
Teachers	7	93	100 (81)
Guidance Counselors	10	90	100 (41)
Adult Friend or Acquaintance	2	98	100 (123)
Peer Friends (Unspecified)	9	91	100 (33)
Total Percentage	2	98	

[A] This category includes all relatives specified by the respondents. It should be noted that when only non-family members are considered, 5 percent of the significant others of whites are black.

For black youth, some interesting exceptions to those noted for white youth can be ascertained from the data presented in Table 6. Sixty-two percent of all white significant others listed by black youth are located within the educational institution.[6] In contrast to the findings for white respondents, this group constitutes 54 percent of all teachers and 78 percent of all guidance counselors listed. These findings indicate that black youth's contacts with "influential" white adults are basically in the school setting.

Table 6: Relationship of Significant Others to Black Respondents by Racial Identity of Significant Others

	Race of Significant Others		
Relationship	Black (N=618) %	White (N=81) %	Total (N=699) %
Family Members and Other Relatives[A]	100	0	100 (475)
Peer Friends (Males)	86	14	100 (29)
Peer Friends (Females)	92	8	100 (12)
Teachers	46	54	100 (59)
Guidance Counselors	22	78	100 (23)
Adult Friend or Acquaintance	68	32	100 (73)
Peer Friends (Unspecified)	89	11	100 (28)
Total Percentage	88	12	

[A] This category includes all relatives specified by respondents. It should be noted that when only non-family members are considered, 36 percent of the significant others of blacks are white.

Taking the results presented in Tables 5 and 6 simultaneously, it can be stated that significant other influence for educational and occupational decisions tends to be race-specific. This contention characterizes white students to a greater degree than black students.

Sources of Significant Other Influence

To facilitate a specification of the sources of significant other influence, the role relationships of significant others were initially collapsed into four general categories: (1) nuclear family, (2) extended family, (3) non-family, and (4) educational (Table 7).[7] Examination of the results presented in Table 7 reveals that while the nuclear family is a prominent source of significant others for both black and white respondents, a higher proportion of significant others originate from the extended family for black respondents than for whites. On the other hand, non-family role relationships serve as a source of more significant others for whites than for blacks. Contrasting the percentages of significant others identified from within the educational institution reveals that slightly more white than black youth have significant others from this arena.

Table 7: Classification of Sources of Significant Other Influence By Race[A]

Source of Significant Other Influence	Blacks %	Whites %	Percentage Difference
Nuclear Family[B]	35	35	0
Extended Family[C]	26	19	7
Non-Family[D]	26	31	-5
Educational[E]	13	15	-2
Total	100	100	

[A] The base n's used in this table differ from previous tables. As before, this varies because of the availability of data in the categories utilized.

[B] Includes father, mother, brothers, and sisters.

[C] Includes grandparents, uncles, aunts, and other blood relatives.

[D] Includes peer and adult friends.

[E] Includes teachers and guidance counselors.

In Tables 8 and 9 an attempt was made to further specify the sources of significant other influence by examining socioeconomic status differences within racial groups, utilizing father's and mother's educational achievement levels as control variables.[8] This strategy yielded one major difference between socioeconomic levels with other trends tending to be consistent between levels.

When father's educational level is controlled, both black and white youth in the low category have more significant others originating from the nuclear family than from any other source (Table 8). Additionally, the tendency for black youth to report more significant others originating from the extended family than do white youth holds in both father's educational achievement categories. On the other hand, the tendency of white youth to select more significant others from non-family sources persists across paternal achievement levels.

Table 8: Classification of Sources of Significant Other Influence by Father's Educational Level and Race[A]

Source of Significant Other Influence[B]	Blacks N=769 Low Ed (N=305) %	Blacks N=769 High Ed (N=464) %	Whites N=943 Low Ed (N=240) %	Whites N=943 High Ed (N=703) %
Nuclear Family	39	34	36	35
Extended Family	21	28	15	21
Non-Family	27	25	32	31
Educational Institution	13	13	16	14
	100	100	100	100

[A] High father's educational achievement was operationalized as high school degree or greater; low father's educational achievement was operationalized as less than a high school degree.

[B] See Table 7 for operationalization of these categories.

In Table 9, when controls for mother's educational achievement were applied, the differences observed in the importance of the nuclear family as a source of significant others for the low versus high categories of father's educational achievement do not persist. The nuclear family tends to be of equal importance across maternal educational achievement levels. The trend for blacks to have more significant others from the extended family and whites to have more significant others from non-family sources persists. The persistence of the differential importance of the extended family and non-family as sources of significant others, for blacks and whites respectively, suggests that the pattern exists regardless of socio-economic status of parents as measured by educational achievement.

Table 9: Classification of Sources of Significant Other Influence by Mother's Educational Level and Race[A]

Source of Significant Other Influence	Blacks (N=775)		Whites (N=942)	
	Low (N=330) %	High (N=445) %	Low (N=368) %	High (N=674) %
Nuclear Family	33	37	35	35
Extended Family	25	26	16	19
Non-Family	26	26	32	31
Educational Institution	15	11	16	15
	100	100	100	100

[A] Operationalizations for this table were identical to Table 8.

Up to this point, concern has been directed toward isolating, in terms of general categories, black-white variations and similarities in the origin of all significant others specified by the respondents. However, the major sources of influence were found to vary by the mode of influence considered. Table 10 presents the significant others listed by respondents in each mode of influence categorized by role relationships. Utilizing this procedure we can check for differences in source of influence by mode of influence.

Table 10: Role Relationships of Significant Others to Respondents by Race and Mode of Influence

Relationship of Significant Other to Ego	Educational Definer* Blacks (N=544) %	Educational Definer* Whites (N=577) %	Educational Model° Blacks (N=148) %	Educational Model° Whites (N=240) %	Occupational Definer* Blacks (N=367) %	Occupational Definer* Whites (N=460) %	Occupational Model° Blacks (N=133) %	Occupational Model° Whites (N=214) %
Father	15	18	14	14	16	22	17	17
Mother	19	19	9	4	22	20	4	1
Brothers and Sisters	10	12	3	12	12	13	8	10
Other Relatives	27	20	14	11	20	17	28	17
Peer Friends	10	12	16	13	12	14	11	12
Teachers	6	7	24	17	7	5	8	8
Guidance Counselors	4	6	1	2	3	2	0	4
Adult Friends or Aquaintances	9	6	16	27	8	7	24	31
	100	100	100	100	100	100	100	100

* A definer is a significant other who influences the individual through mutual interaction with the individual.

° A model is a significant other whose influence does not occur through the interaction process but possesses characteristics which the individual seeks to emulate.

Once again a consistent pattern emerges across racial groups regarding the nuclear family and other relatives as sources of significant others. However, this trend appears to be restricted to the definer modes of influence. For both educational and occupational definers, family members are most frequently perceived as being influential. Seventy-one percent of all educational definers named by blacks and 69 percent of those named by whites are family members. Similarly, family members constitute 70 percent of all occupational definers listed by black youth and 72 percent of those given by white youth. However, while family members in general are more frequently nominated, the nuclear family members predominate. This contention is supported by the finding that 44 percent (blacks) and 49 percent (whites) of significant others in the educational definer mode of influence are nuclear family members. A similar trend is observed for the occupational definer mode with 50 percent found to be nuclear family members for blacks and 55 percent for whites.

When the data for significant others who were named as models is examined, a quite different trend emerges. Over half of all significant others listed as educational models are found to originate from non-familial sources (57 percent for blacks, 59 percent for whites). A similar trend, of slightly less magnitude, is observed for occupational models. Forty-three percent of all occupational models for blacks are from non-familial sources, while 55 percent of these significant others originate from non-familial sources for whites. Additionally, it should be noted that the role of the nuclear family markedly descreases in importance as compared to that in the definer modes. In the educational model mode of influence, the nuclear family makes up 26 percent of those named by blacks and 30 percent of those named by whites. The proportion of occupational models made up by nuclear family members is similar (29 percent for blacks, 28 percent for whites). Within the nuclear family itself, the naming of mothers as influential decreases most markedly from the definer modes to the model modes.

These results indicate that for both black and white youth, career-definer influence comes primarily from nuclear family and extended kin sources, while career-modeling influence stems about equally from both familial sources and non-familial sources. At this point, attention will be directed toward specific black-white variations within these general trends.

Variations in Educational Definer Influence by Race:

Focusing on the significant others listed by respondents as educational definers, we find that the patterns are generally similar with one exception. Although the role of family members as educational definers is similar for both racial groups, the extended family is of greater importance for blacks. Within all family and kinship categories, proportionately more "other relatives" are listed by black youth (27 percent versus 20 percent). This finding coincides with results presented earlier.

Variations in Occupational Definer Influence by Race:

When attention is directed toward occupational definers, Table 10 manifests few variations by race groupings. The largest difference observed is in the role of fathers as occupational definers. Fathers constitute 16 percent of all occupational definers named by black youth. Among white youth, fathers are listed 22 percent of the time. In general, all other sources of occupational definers are equally represented.

Variations in Educational Model Influence by Race:

As previously noted, over half of those named as educational models originate from non-family sources. However, the importance of the various groups within this source category differs for each racial group. More whites than blacks (27 percent to 16 percent) are found to have "adult friends or acquaintances" as educational models. On the other hand, more black youth are found to name teachers in this mode of influence (24 percent to 17 percent).

While the proportion of nuclear family members listed as educational models is similar for both blacks and whites, black respondents list mothers as educational models more frequently than whites do (9 percent to 4 percent). White youth, on the other hand, are found to have proportionately more brothers and sisters as educational models than blacks (12 percent to 3 percent). The tendency persists for extended family members to be a more important source of significant others for black youth. Only 14 percent of the educational models named by both groups are fathers.

Variations in Occupational Model Influence By Race:

In considering occupational models, we find similar patterns to that found with educational models. The largest proportion of occupational models originate from non-family sources. Within the non-family category, the group of greatest importance for both black and white youth is "adult friends and acquaintances." However, members of this group are more frequently named by whites (31 percent to 24 percent). The other groups included in this category are similarly represented in the listings of both racial groups.

The largest variation observed between the listings of blacks and whites is in the proportion of occupational models who are extended family members or "other relatives." As has occurred in the consideration of other modes of influence, blacks more frequently select "other relatives" than do whites (28 percent to 17 percent). All other roles within the family categories are similarly represented. Fathers constitute only 17 percent of the occupational models named by both groups. This finding, coupled with those above, suggests that at least for the respondents in our sample, the major source of occupational modeling influence comes from adults other than the father.

Summary

The preceding discussion has focused upon the description of the patterns and variations in the number, racial characteristics, and sources of significant other influence for the career decisions of black and white youth. At this point, an attempt will be made to summarize the major findings.

It was found that black and white youth identified similar numbers of significant others for their career decisions. Additionally, those listed as significant others tended to be of the same race as the respondents. This trend was more characteristic of white students than black students. The major variations between the racial groups appeared in the consideration of the sources of influence.

The familial network provided the majority of significant others for both groups. However, the relative importance of this general source of influence varied by the mode of influence considered. Within definer modes of influence, the family in general and the nuclear family in particular predominated as the major sources of significant others for both blacks and whites. Non-family sources tended to be of greater importance as models for both groups. This was more true in the influence mode of educational models than in that of occupational models. Additionally, it tended to be more characteristic of the selections of white students than black students. Of particular interest in the consideration of models was the relatively low impact of nuclear family members as models.

The most consistent variation observed between the racial groups was in the selection of extended family members as significant others. Extended family members were generally of greater importance for blacks than whites. This was true, to varying extents across all modes of influence.

FOOTNOTES

[1] This point is discussed in more detail in Chapter III.

[2] The fact that a significant other may be included more than once is reflected in the fact that the addition of the totals presented in Table 2 yields a number greatly exceeding that of 2463 reported in Table 1.

[3] For occupational significant others, Woelfel (1972: 88) reports an average of 6.86 significant others.

[4] Tables 5 and 6 are based on total n's differing from those presented in Table 4. The reason for these differences is that in some cases the respondents did not specify their relationship to a significant other. Also, the presentations of percentages in Tables 5 and 6 are exceptions to the usual column presentations of percentages.

[5] This finding is not actually presented in Table 5. However, it can be calculated from the figures presented.

[6] This finding is not actually presented in Table 6. However, it can be calculated from the figures presented.

[7] Following the observation of Woelfel (1972), it must be noted that parents constitute a smaller pool of significant other candidates than any other group. That is, while there are two available parents at most, other categories are generally larger. This must serve as a basis of interpretation and understanding throughout this section of analysis.

[8] The son's report of parental educational achievement was utilized wherever the parents did not respond. In cases where the parents did respond, their self report was used.

CHAPTER V

Causal Model Analysis

Introduction

This chapter will evaluate the impact of significant other influence on educational and occupational aspirations. This evaluation will be conducted within the parameters of the basic causal system discussed in detail in previous chapters. Throughout the analysis, modifications of models are made through two strategies: (1) analysis of alternate operationalizations of the significant other influence variable, and (2) the addition of selected exogenous and endogenous variables to the basic causal system.

Because significant other influence and its relationship to career decisions is the primary concern of this chapter, a brief review of alternative operationalization measures of significant other influence utilized is necessary. The two alternative operationalizations of significant other influence (SOI) employed in this study have recently become a focal concern for social stratification scholars. A "perceived" measure of SOI is utilized, as well as an "objective" measure of the same variable (Sewell, Haller, and Portes, 1969; Haller, Woelfel with Fink, 1969). The perceived measures of SOI are similar to the operational variables employed by Sewell and his associates in several studies which led to the development and refinement of the Wisconsin Model of status attainment (Haller and Portes, 1973). The behavior and attitudes of significant others are assessed by asking ego to provide his perception of that behavior and attitude. The "objective" operational measure of the SOI variable follows the lines of the "Wisconsin Significant Other Battery" where each significant other is identified and behavioral expectations for ego are measured by directly questioning the significant other (Woelfel, Haller with Fink, 1969). Comparison of the alternative measures of SOI should provide a basis for assessing administrative complexities involved in utilizing this variable within the context of resources available to guidance systems and personnel.

Assessment of the importance of additional variables will be made by systematically expanding the exogenous and endogenous structures of the basic causal system. Expansions of the exogenous variables reflect a concern with evaluating the utility of variables which identify characteristics of the respondents' social origins. Expansions of endogenous variables primarily focus on alternative social-psychological characteristics which in past research have been thought to intervene between social origins and career decisions. The evaluation of these extensions will be made separately for black and white youth in order that any race variations in the dynamics of the career decision-making process can be identified.

A Note on the Dependent Variables: The ultimate dependent variables for all models analyzed in this chapter are educational and occupational *expectations* rather than the less reality bound measures such as educational and occupational *aspirations*. This selection is predicated on the fact that *expectations* reflect the *most realistic* estimates of the respondents' career decisions (see the discussion of conceptual development in Picou, Curry, and Hotchkiss, 1976). As such implications drawn regarding guidance programs, future research, and general policy orientations will be based on the respondents' current *realistic plans* rather than *desires*. This strategy should provide a more solid basis for specifying future research and programmatic directions to educators.

Analysis Strategy

Figure 1 presents a heuristic summary of the causal relationships which structure the path models to be analyzed in this chapter. As discussed in detail in Chapter II, the causal model assumes that background variables, including family status and mental ability, affect career decisions *via* a series of linking mechanisms rather than directly. The linking mechanisms can be classified into three types: (1) educational behaviors, e.g., students' academic performance; (2) socialization mechanisms, e.g., significant other influence; and (3) motives, values, and attitudes, e.g., academic self-concept. The analysis of data presented here follows

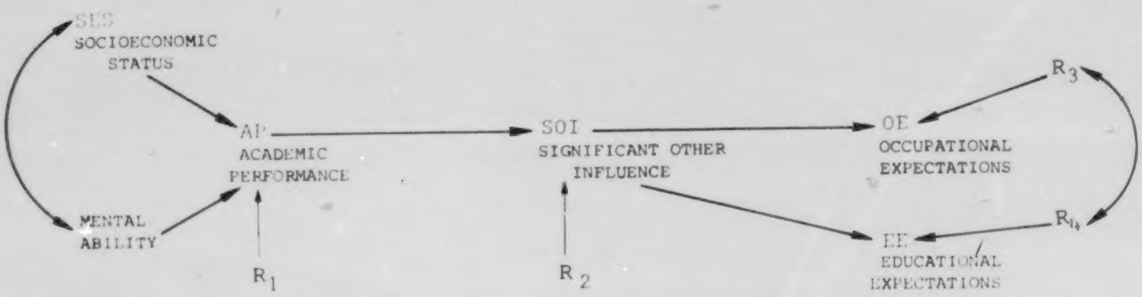


Figure 1: Heuristic Diagram of Recursive Causal System of the Career Decision-Making Process

a series of steps which correspond to those broad classes of variables in the model. A *reduced model* containing only the relationships between the background variables and career decisions *without respect to the intervening mechanisms* is initially examined. Certainly the guiding theoretical perspective calls for effects of background characteristics on career decisions, when intervening variables are omitted. The fact that some of these effects will be reduced when intervening variables are incorporated into the analysis should not be interpreted to mean that background variables do not, after all, influence career plans. Only if variables were added which are "causally prior" to mental ability and social origins *and* which reduced the estimates of effects of these background factors on career decisions, would such an inference of spurious relationship be justified (for more information see: Finney, 1972). The analyses of the reduced model, then, produce a set of estimates of gross or *total effect* of background on career decisions. The reduced model considers the initial and the ultimate components in the causal system; the remaining analyses deal with the intermediate or *intervening* links. Step two of the analysis introduces the bahavioral and interpersonal influence (socialization) variables. A final expansion considers motivational and attitudinal components. The focus of this study suggests the tracing of the route by which background gets translated into career plans (and by theoretical and empirical inference, into achievement). As the data analysis develops, it will become apparent that a critical link in this route runs through socialization mechanisms as manifested in the influence imparted by significant others on career plans. A by-product of the analyses of intervening mechanisms should be the reduction of background effects, as initially estimated in the basic reduced model. The new estimates of effects of background variables will be "net" of the intervening mechanisms. These effect estimates indicate how much *direct impact* of the background variables on career plans still remains once behavioral, socialization, and attitudinal links between background and career plans are removed. The theoretical model guiding this research leads one to expect that the direct effects of background on career plans should be reduced relative to the total effects. Attention is now directed to the basic reduced model.

The Basic Reduced Model

Initially we attempt to develop a parsimonious statement of the total impact of background on career plans, in so far as the data at hand will permit. Analysis of the reduced model is guided by a desire for simplicity. An attempt is made to extract the simplest model possible that does not do injustice to the subject under investigation.

Two variables serve to operationalize the concept of career plans. The level of educational expectation is taken as a function of the number of years of schooling which each respondent expected to complete. The level of occupational expectations is taken as the status of the occupation in which each respondent indicated he expected to work after completing his schooling. As with status of father's occupation, status scores for son's expected occupation were assigned the appropriate Duncan SEI codes (Duncan, 1961). Following the theoretical strategy, two classes of independent variables are considered: "mental ability" and "social origins." The concept of mental ability was operationalized as a standard test of mental ability, the Henmon-Nelson Test of Mental Ability (Henmon and Nelson, 1942). The class of variables designated by the term, social origins, cannot be as simply condensed into one variable. Three indices of family status are used: (1) status of the father's occupation as measured by the Duncan SEI (Duncan, 1961), (2) father's educational achievement, and (3) mother's educational achievement. These three status variables are treated in two distinct ways: first, as an aggregated index of status, and second, as separate variables. Preliminary results suggest that the loss of information implied by the index is compensated for by the parsimony achieved. Finally, two variables which describe family composition are added to the basic model as exogenous variables--family size and family type (intact or broken).[1]

Analysis of Aggregated SES Index: In this subsection attention focuses on the simplest operational version of the basic model which is presented graphically in Figure 2.

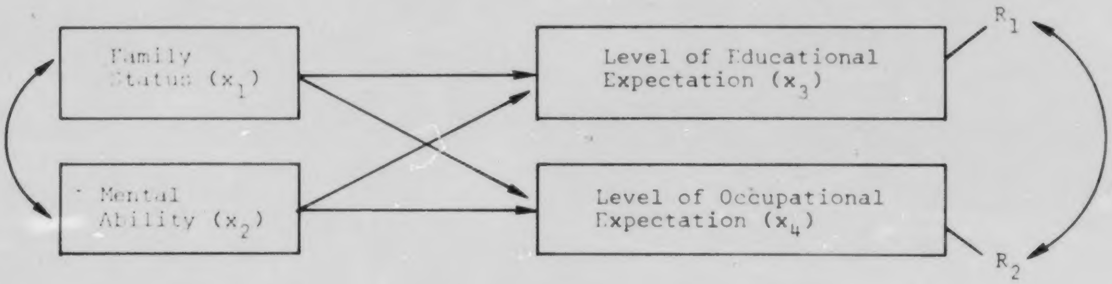

Family Status (x_1)
Mental Ability (x_2)
Level of Educational Expectation (x_3)
Level of Occupational Expectation (x_4)
R_1
R_2

Figure 2: **Reduced Model Using Aggregated SES.**

The socioeconomic index (social origins) was created by averaging the three separate indicators of status (after each was changed to standard form)--father's occupational status, father's education, and mother's education. The standardized path-regression coefficients for the basic reduced model are presented separately for blacks and whites in Table 1.[2] The tabulation also shows zero order correlations in parentheses next to each partial coefficient.

Results for educational expectations are shown in the top panel and those for occupational expectations are shown in the second panel of Table 1.

Table 1: Standardized Path Regression Coefficients, Zero-Order Correlations and Coefficients of Determination (R^2) for Basic Reduced Form Model, by Race

Dependent Variable: Educational Expectations

Independent Variable	Blacks	Whites
Family Status	.285* (.306)	.231* (.409)
Mental Ability	.161 (.237)	.511* (.520)
R	.337	.565
R^2	.114	.319

Dependent Variable: Occupational Expectations

Independent Variable	Blacks	Whites
Family Status	.345* (.338)	.220* (.378)
Mental Ability	.065 (.170)	.457* (.468)
R	.354	.512
R^2	.125	.262

*Significant at $p(\alpha) < .05$ for a one-tailed test.

Inspection of the data in Table 1 shows a clear pattern. For blacks, socioeconomic status exercises a moderate influence over both educational (.285) and occupational expectations (.345); however, mental ability shows only a weak affect on either measure of career plans. On the other hand, for white youth, mental ability dominates career planning whether manifest in educational or occupational expectations. In general, the overall explanatory power of the reduced model is considerably higher for whites than for blacks. The differences between multiple coefficients of determination (R^2) for the two races are primarily due to the difference in the correlations between mental ability and career plans for the two racial groups.[3]

Analysis of Disaggregated Reduced Model: It should be noted that the components of the index of socioeconomic status may not be contributing to the effect of status on career plans. In fact, Hauser (1972) has recently demonstrated the utility of disaggregating variables in causal models. An assessment of the relative effects of each of the status measures is accomplished by considering the model presented in Figure 3.

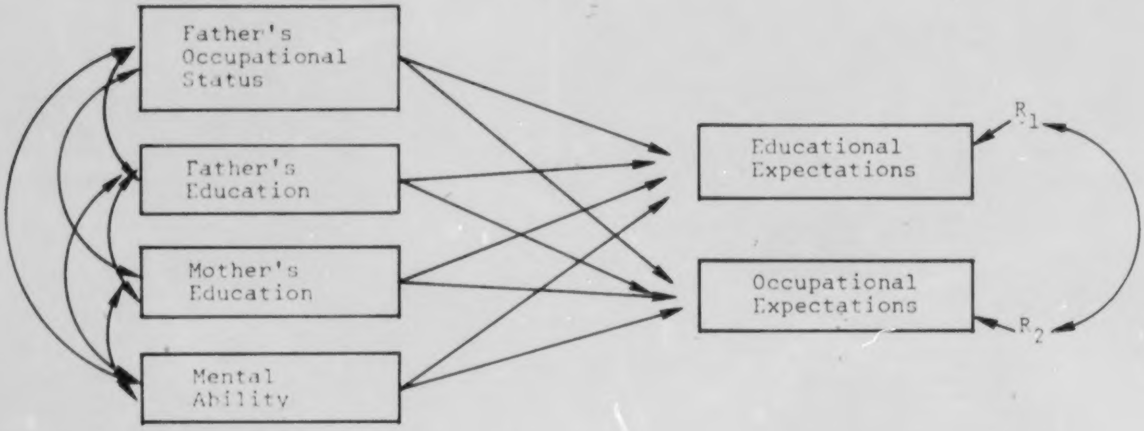


Figure 3: Reduced Model of SES Disaggregated

The only difference between Figures 2 and 3 is that in the latter the three variables composing the status index are presented in disaggregated form. The numerical values for the disaggregated status model are presented by control categories in Table 2.

The data in Table 2 reveal that for white respondents, father's occupation was the important component of the effect of socioeconomic status on occupational and educational expectations. On the other hand, for black youth, mother's education was found to be the most important socioeconomic status predictor of career plans.

Table 2: Standardized Path Regression Coefficients, Zero-Order Correlations, Coefficients of Determination (R^2) for Disaggregated Reduced Form Model, by Race

Dependent Variable: Educational Expectations

Independent Variable	Blacks	Whites
Father's Occupational Status	.092 (.182)	.249* (.449)
Father's Education	.078 (.199)	.138 (.423)
Mother's Education	.152 (.219)	-.049 (.271)
Mental Ability	.172* (.237)	.473* (.520)
R	.312	.603
R^2	.097	.364

Dependent Variable: Occupational Expectations

Independent Variable	Blacks	Whites
Father's Occupational Status	.092 (.189)	.211* (.374)
Father's Education	.155 (.244)	.038 (.322)
Mother's Education	.170* (.243)	.021 (.266)
Mental Ability	.071 (.170)	.450* (.468)
R	.315	.521
R^2	.099	.271

*Significant at $p(\alpha) \leq .05$ for a one-tailed test.

When educational expectations were considered for black youth, however, none of the socioeconomic status variables were found to be "statistically" significant. The coefficient for mother's education was found to have the largest effect, similar in magnitude to the effect observed for mental ability. These results correspond with a number of studies which have found that various indicators of socioeconomic status have weaker effects on career expectation and career achievements for blacks than for whites (Cosby and Picou, 1973; Blau and Duncan, 1967; Carter and Picou, 1975).

Treating the three components of socioeconomic status separately has revealed substantial differences between black and white youth regarding the manner in which status affects career plans. However, the disaggregation also confuses the basic observation of the relative effects of status versus mental ability which was apparent when the composite index of socioeconomic status was utilized. The effects of socioeconomic status in the disaggregated model are spread across three variables while the effects of mental ability remain summarized in one variable. This "spreading" of socioeconomic status effects was particularly apparent for educational expectations. For black respondents, mental ability was found to have a stronger influence on educational expectations than any of the three status variables; hence, viewing the disaggregated model, one might be led to the conclusion that mental ability is more important than status background in determining educational expectations--a finding somewhat different from the conclusion drawn in the comparison of the effects of mental ability to the effects of the composite measure of socioeconomic status. Upon reflection, however, it is clear that when interest centers on comparing the relative effects of the two classes of variables, mental ability and socioeconomic status, one cannot compare the overall effect of mental ability to the effects of each component of socioeconomic status. The original observation remains intact that socioeconomic status, as a general type of variable, exercises relatively more influence than mental ability on both educational and occupational plans of black youth.

Once one observes the manner in which socioeconomic status influences career plans differently for the two races, it seems more convenient to treat socioeconomic status as a composite index. Briefly, it is worth noting that two advantages stem from the use of this index. The sampling stability of path coefficients declines as the number of independent variables increases. Therefore, by keeping one measure of status rather than three, sampling error is reduced. Additionally, clarity and parsimony of presentation are enhanced by retaining a minumum number of variables. Certainly the socioeconomic status index cannot be justified if it creates aberrations in the path coefficients associated with other variables. For example, it the standardized path-regression coefficients indexing the effect of mental ability on educational and occupational expectations had been substantially modified by substituting three components of status for the aggregate measure, the aggregate measure could not have been justified. Such is not the case, however. For educational expectations of blacks, the coefficient for mental ability in the aggregated status model is .161 but changes to .172 when status is decomposed into its component parts. For educational expectations of whites, the shift is from .511 for the aggregated model to .473 in the disaggregated model. Similarly, small shifts occur when occupational expectations are considered. For blacks, the coefficient for mental ability changes from .065 for the aggregate status model to .071 for the disaggregated model. The corresponding shift for whites is .457 to .450.

For the remaining analysis, the socioeconomic status index will be used in lieu of the three separate components. It would be incorrect, however, to deduce that the small effect of the change from composite to disaggregate status on coefficients associated with mental ability will automatically apply to every other independent variable in the final model. Consequently, each model is calculated in two forms, one using the aggregate status measure and one using the components as separate variables. Since the differences between the two forms of each model are generally small, only models containing the composite index of socioeconomic status will be reported.

Expanding the Exogenous Variables: Past research has indicated that family size (Duncan, Featherman and Duncan, 1972) and family type (Moynihan, 1965) comprise aspects of social origins which influence the career decision-making process. Following is an analysis of a model which incorporates family size, as indicated by the number of children in the family, and family type, which is defined by three levels: (1) home intact (scored as a 3); (2) home composed of one parent and one step-parent (scored as a 2); and, (3) home with only one or no parents present (scored as a 1). The expanded exogenous model is presented in Figure 4.

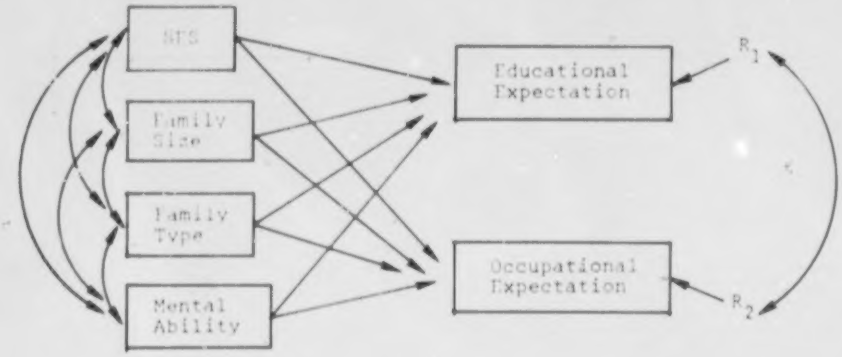


Figure 4: Reduced Model with Expanded Exogenous Model

Past research leads to the anticipation that family size will be negatively associated with career plans. In addition, past research suggests that children from intact families hold higher career expectations than youth from non-intact family types. Accordingly, family type should show a positive effect on career plans. The two family composition variables are situated as non-causally related to socioeconomic status and mental ability. It is probable that socioeconomic status affects family size and composition to some extent, but analysis of these effects is not important for the purposes at hand. Similarly, any possible causal effects of family composition on mental ability also remain unanalyzed. The main purpose for examining the effects of family size and family type on career plans at this point in the analysis is to determine whether or not these variables should be incorporated in subsequent analyses of socialization and attitudinal variables. Only if the family composition variables exert a strong influence on career plans for both groups will the added complexity implied by incorporating two additional exogenous variables into the analysis be justified. Table 3 presents the data for the expanded exogenous model presented in Figure 3 above.

Table 3: Standardized Path Regression Coefficients, Zero-Order Correlations and Coefficient of Determination (R^2) for the Expanded Exogenous Model, by Race

Dependent Variable: Educational Expectations

Independent Variable	Blacks	Whites
SES	.267* (.306)	.229* (.409)
Family Size	-.073 (-.119)	-.132 (-.245)
Family Type	.074 (.052)	.092 (.064)
Mental Ability	.161 (.237)	.480* (.520)
R	.350	.581
R^2	.123	.338

Table 3 (con't)

Dependent Variable: Occupational Expectations

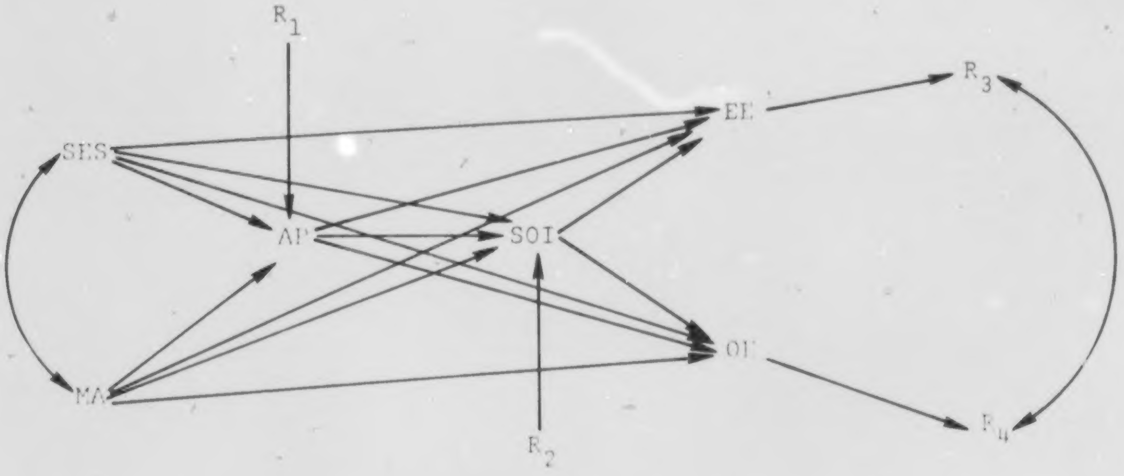
Independent Variable	Blacks		Whites	
SES	.332*	(.338)	.219*	(.378)
Family Size	-.054	(-.102)	-.218*	(-.296)
Family Type	-.057	(-.049)	-.136	(-.123)
Mental Ability	.065	(.170)	.394*	(.468)
R	.351		.554	
R^2	.123		.307	

* Significant at $p(\alpha) \leq .05$ for a one-tailed test.

Inspection of the data in Table 3 reveals a confusing mixture of coefficients. In several instances the sign of the coefficients do not match a priori expectations, but in every case of reversal, the coefficient is so small in magnitude that it cannot be confidently claimed that the departure from a zero value is due to anything other than sampling error. However, for the occupational expectations of white youth, the coefficient for family size is nearly as large in absolute value as the coefficient for the socioeconomic status index (-.218 for family size vs. .219 for SES). Furthermore, the coefficient for mental ability has been reduced by the inclusion of family size in the equation for occupational expectations (.457 when family size is omitted vs. .394 when family size is included). These results suggest that family size has an independent effect on occupational decisions of white youth. The effect is negative, indicating that as number of siblings increase within a family, the status level of occupational expectations goes down. Further research regarding this variable appears warranted in light of these results. However, because these results are race-specific and limited solely to occupational expectations, the family size and family type variable will be excluded from the more complicated models presented below. One fact should be observed, however. The effect of mental ability on occupational expectations will be inflated slightly for whites by the exclusion of family size.

Model Expansions: Significant Other Influence and Academic Performance as Intervening Variables

In this section two types of variables are added to the basic model. First, respondents' academic performance as determined by grade point averages in academic subjects during the freshman year of high school is taken to represent behavioral links between background and career expectations. Secondly, the expectations of significant others for each respondent are interpreted as an important aspect of socialization which links background to career expectations. These extensions of the reduced model are presented in Figure 5.



SES - socioeconomic status index
MA - mental ability
AP - academic performance
SOI - significant other influence
EE - educational expectations
OE - occupational expectations

Figure 5: Expanded Model with Intervening Variables

For each path in the model, effects are assumed to be positive. Some questions can be raised regarding the causal ordering of significant other influence and academic performance. It has been argued that significant others influence student grades as well as being influenced by them (Picou, Curry, Olivero, Cosby, 1972; Porter, 1974). However, Sewell, Haller, and Portes (1969: 84) posit ". . . it can be assumed that for the most part {academic performance} precedes {significant other influence}." This assumption does not, however, change estimates of direct effects of any variables on career plans. It should be noted that estimates of *indirect effects* of significant other influence on career plans may be reduced by the assumption, while *indirect effects* of academic performance may be inflated by the assumption.

Certainly there are mechanisms other than academic performance and significant other influence that influence career plans; hence, the model in Figure 5 is a heuristic scheme. We do not expect that all direct paths from background to career plans will be exactly zero. Similarly, all the effects of background on significant other influence may not operate via academic performance. The total effects of background on educational and occupational expectations should be reduced when academic performance and SOI are added to the equations. Furthermore, at least part of the effects of background on SOI should operate indirectly through academic performance. The main focus of the analysis of this model centers on comparisons of different operationalizations of the significant other concept. The specific difference in operationalization was noted at the beginning of this chapter.

The Perceived Significant Other Influence Model in Aggregate Form: Initially, for the model in Figure 5, significant other influence is defined as the average of four separate variables: *respondent's perceptions* of (1) the level of the father's encouragement to attend college, (2) the level of the mother's encouragement to attend college, (3) the level of teacher's encouragement to attend college, and (4) the plans of peers to attend college. The model of Figure 5 thus translates quite literally into operational form with the aggregate form of perceived SOI taken to represent SOI in the model. The standardized path-regression coefficients for this model are presented in Table 4. Independent variables are arrayed across columns. Coefficients are presented in pairs, the first value in each pair indicating the effect for blacks (B) and the second value representing the effect for whites (W). Dependent variables are listed down the rows of the table. Zero order correlations are given in parentheses just below each standardized path regression.

The coefficients in Table 4 revealed that for both black and white youth, mental ability was the strongest predictor of students' academic performance. The effects of socioeconomic status on academic performance were negligible. These results, for both blacks and whites, are consistent with the most recent research in this area on white youth (Sewell, Haller, and Ohlendorf, 1970; Picou, 1973). Thus, our findings suggest that the pattern for blacks is similar to that for whites. Turning to the equation for perceived significant other influence, socioeconomic status and mental ability manifested substantial effects on this variable for the white respondents.

Table 4: Standardized Path Regression Coefficients, Zero-Order Correlations and Coefficients of Determination (R^2) for Perceived SOI Model, By Race

Dependent Variables	Independent Variables SES B	 W	 MA B	 W	 AP B	 W	 PSOI B	 W	 R^2 B	 W
AP	-.022 (.118)	.095 (.278)	.410* (.402)	.521* (.482)					.162	.241
PSOI	.143 (.127)	.263* (.424)	-.053 (.045)	.368* (.466)	.133 (.120)	.112 (.332)			.029	.294
EE	.253* (.306)	.095 (.409)	.057 (.237)	.258* (.520)	.252* (.315)	.109 (.391)	.262* (.320)	.462* (.639)	.239	.489
OE	.347* (.338)	.139* (.378)	-.065 (.170)	.366* (.468)	.316* (.319)	-.097 (.201)	.037 (.112)	.333* (.502)	.198	.342

* Significant at $p(\alpha) \leq .05$ for a one-tailed test.

Variable List:

SES - composite index of socioeconomic status
MA - mental ability
AP - academic performance
PSOI - perceived significant other influence (aggregate)
EE - educational expectations of ego
OE - occupational expectations of ego

No similar effects were noted for blacks. Additionally, the effects of academic performance on perceived SOI were negligible. For the ultimate dependent variables in the model, educational expectations and occupational expectations, significant variations in variable effects were observed between racial groups. Socioeconomic status effects were greater for the black respondents. Mental ability maintained significant direct effects on plans for the white respondents only. This trend was reversed for the effects of academic performance on expectations, with significant direct effects for black respondents only.

For the perceived SOI variable, the effects on educational expectations were significant for both racial groups. However, the effect manifested for white youth was considerably larger (.462 vs. .262). For occupational expectations, perceived SOI again was found to be significant for whites, while the effect for blacks was essentially zero (.333 vs. .037). These findings indicate that across racial groups, students' perceptions of encouragement to attend college are more significant for the career decisions made by whites than for those made by blacks. Additionally, educational decisions appear to be more strongly influenced by SOI than do occupational decisions. Perceived SOI was also found to be the best predictor of educational expectations among all variables considered in the model. This trend characterizes both black and white youth, but is considerably stronger for whites. On the other hand, the pattern of variable effects differed by race when occupational expectations was the dependent variable. Mental ability (.366) and perceived SOI (.333) were the strongest predictors for whites, while socioeconomic status (.347) amd academic performance (.316) were the strongest predictors for blacks.

The theoretical perspective guiding this research calls for a reduction of the total effects of background factors on career plans by the inclusion of academic performance and significant other influence as intervening variables. An evaluation of this process is presented in Table 5. This table presents the coefficients for socioeconomic status and mental ability with and without academic performance and significant other influence in the equations.

In Table 5, columns titled "Without Intervening Variables" contain coefficients calculated for the basic reduced model where only status and mental ability were taken as estimators of career plans. These values reveal the total or overall effect of background on career plans. The columns titled "With Intervening Variables" present estimates of the direct effect of the two background variables on career plans once academic performance and significant other influence have been "partialed out." Comparisons of the total effects of background to the direct effects for black youth reveals that socioeconomic status maintained a rather large direct effect on career plans when the intervening variables were introduced. This observation is true for both educational and occupational expectations. For black respondents, mental ability had very little effect on career plans in the reduced model.

Table 5: Effects of Exogenous Variables on Career Plans With and Without Intervening Variables, By Race

Dependent Variable: Educational Expectation

	Blacks		Whites	
Independent Variable	Without Intervening Variables	With Intervening Variables	Without Intervening Variables	With Intervening Variables
SES	.285*	.253*	.231*	.095
MA	.161	.057	.511*	.258*
R	.337	.489	.565	.669
R^2	.114	.239	.319	.489

Dependent Variable: Occupational Expectation

	Blacks		Whites	
Independent Variable	Without Intervening Variables	With Intervening Variables	Without Intervening Variables	With Intervening Variables
SES	.345*	.347*	.220*	.139*
MA	.065	-.065	.457*	.366*
R	.343	.445	.512	.585
R^2	.118	.198	.262	.342

* Significant at $p(\alpha) \leq .05$ for a one-tailed test.

Turning attention to the white respondents, the direct effects of both SES and mental ability on career plans were found to be considerably less than the total effects. More than half of the total effect of status on educational plans was found to operate through significant other influence. The total effect was .231 and the indirect effect through significant other influence was .122 (.263 x .462). Other indirect effects of SES of educational plans were rather small for whites. Similarly, the total effect of mental ability on educational expectations of white youth was .511. Approximately 33 percent of the total effect (.170 = (.368) (.462) operated through significant other influence while approximately 11 percent (.057) was found to operate through academic performance. The indirect effects of mental ability on educational plans operating jointly via academic performance and SOI was .027. About half of the overall effect of mental ability on white youths' educational plans was found to be indirect. Of this indirect component, most of the effect operates through significant other influence in a two step process.

A similar pattern was observed for occupational expectations. For black youth the total effects of socioeconomic status carry over largely intact as direct effects. In contrast, for whites, nearly two-fifths of the total effect of socioeconomic status was indirect (.220 x .139 = .081) and about one-fifth of the effects of mental ability were indirect (.457 x .366 = .091). Actually, the indirect effects of mental ability on the occupational expectations of white youth which operate through significant other influence are slightly larger in magnitude than the overall indirect effects (effects via PSOI = .368 x .333 = .123). However, the small negative coefficient associated with the direct effect of academic performance on white youths' occupational plans reduces the overall magnitude of indirect effects between mental ability and occupational plans. It should be noted that the magnitude of the negative coefficient for mental ability is well within the acceptable range of sampling error given that the coefficient for the entire population was exactly zero. Hence, it is assumed that this negative value carries no substantive implication.

Not only does the pattern of effects on career plans associated with the several independent variables vary by race, but also the accuracy of the model varies markedly by race. In the present version of the expanded model as well as in the reduced models, career plans are much more accurately estimable for white respondents than for black respondents. This observation suggests the possibility that variables which are important in shaping career plans of black youth have been omitted from consideration. In addition, the present form of the model estimates educational expectations more accurately than occupational expectations. This latter observation is undoubtedly due, at least in part, to the fact that significant others' attitudes regarding education were elicited from each ego, but SO attitudes toward occupations are neglected in the perceived measure of significant other influence.

Objective Significant Other Influence in Aggregate Form: At least three important objections may be raised against the perceived SOI measure utilized in the preceeding discussion. First, the list of significant others is determined a priori by the researcher; therefore, it may omit significant others who are important for the formation of the career plans of respondents (Haller, Woefel, and Fink, 1969). Secondly, attitudes and behaviors of significant others may not be well summarized by informal observations of ego (Jencks, 1972). Finally, the traditional measures of perceived SOI do not incorporate significant other attitudes about ego's occupational career plans. All of these problems are addressed by the objective significant other variables used in this phase of the analysis. For the data presented below, each significant other was identified by obtaining a list of significant others from each respondent. Thus, the identity of significant others does not depend on a priori assumptions of the researcher. Once the list of significant others for each respondent was compiled, each significant other was contacted and asked for his or her expectation regarding (a) ego's educational achievement and (b) ego's occupational achievement.

In the previous analysis phase, it was observed that the intervening variables--academic performance and significant other influence--do not absorb much of the effects of background on career plans for black youth. They did account for about half of the total effects of background on the educational expectations and a somewhat smaller proportion of the total effects of background on occupational expectations for white youth. It was also found that the perceived SOI model did not estimate career plans of black respondents as accurately as those of white respondents. In the present subsection, it will be especially important to determine whether the objective measures of significant other influence reduce these discrepancies between theory and fact. The model is presented in Figure 6.

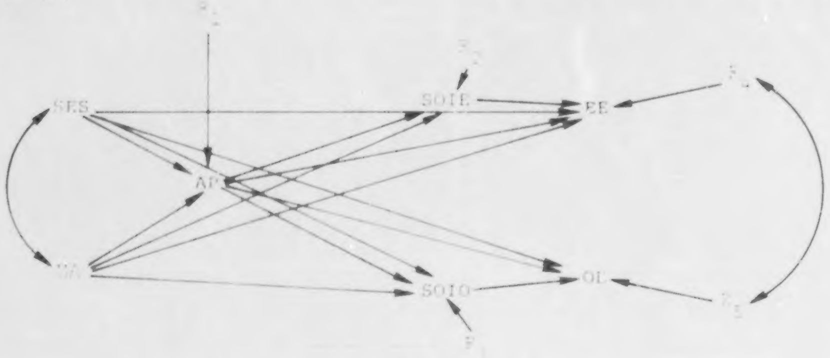


Figure 6: Objective Aggregated Significant Other Model

SES - composite index of family status
MA - mental ability
AP - academic performance
SOIE - significant other influence for education, objective form
SOIO - significant other influence for occupation, objective form
EE - educational expectation
OE - occupational expectation

It should be noted that significant other expectations for ego's education (SOIE) are not shown to influence occupational expectations (OE), and significant other's occupational expectations for ego (SOIO) are not shown to influence ego's educational expectations (EE). Missing paths connecting the significant other variables and the career plans variables remain untested assumptions in the calculations presented here. The difficulty in testing these assumptions stems from the fact that some reciprocal effects may occur between SOIE and SOIO, and between EE and OE. Reciprocal paths are difficult to analyze in cross-sectional data as is available for this report.

Inspection of the data presented in Table 6 reveals that the pattern of the effects of background variables on objective SOI is somewhat different than the pattern of effects on perceived SOI. It should be recalled that SES and mental ability were found to predict perceived SOI for white youth. No corresponding effects were observed for blacks. On the other hand, for the objective SOI measures SES, mental ability and academic performance were all found to influence the level of significant others' expectations for students with only two exceptions. Specifically, for significant others' educational expectations for ego, socioeconomic status and academic performance had the strongest effects, with the magnitude of the coefficients being slightly larger for the black respondents. However, the effect of mental ability on significant others' educational expectations was almost three times greater for whites than blacks. These results suggest that in forming educational expectations for ego, significant others take into account social status characteristics of ego and the academic performance of the student in high school. For white youth, mental ability also influence significant others' educational expectations for ego, but no such effect appears for black youth.

For occupational expectations of significant others, socioeconomic status was not found to be a strong predictor for whites. Mental ability was found to be a strong estimator of occupational expectations of blacks. These results differ from the pattern observed for educational significant other influence. Academic performance was found to influence significant others' occupational expectations for both racial groups. Mental ability and academic performance, respectively, were the strongest predictors for whites, while the opposite trend (in terms of magnitude of the coefficients)

Table 6: Aggregated Objective Significant Other Influence Model, By Race

Dependent Variables	SES		MA		AP		SOIE		SOIO		R^2	
	B	W	B	W	B	W	B	W	B	W	B	W
AP	-.022 (.118)	.095 (.278)	.410* (.402)	.521* (.482)							.162	.241
SOIE	.392* (.440)	.376* (.564)	.107 (.369)	.301* (.544)	.367* (.438)	.318* (.529)					.352	.510
SOIO	.195* (.279)	.040 (.249)	.248* (.386)	.348* (.466)	.269* (.360)	.315* (.472)					.226	.292
EE	.181* (.306)	-.003 (.409)	.013 (.057)	.252* (.500)	.184* (.315)	.024 (.391)	.281* (.433)	.583* (.694)			.222	.511
OE	.325* (.338)	.213* (.378)	-.102 (.170)	.371* (.468)	.283* (.319)	-.166* (.201)			.141 (.289)	.337* (.502)	.259	.340

* Significant at p( ) .05 for a one-tailed test.

SES - composite index of family status
MA - mental ability
AP - academic performance
SOIE - significant other influence for education, objective measure
SOIO - significant other influence for occupation, objective measure
EE - educational expectation of ego
OE - occupational expectation of ego

was observed for blacks. These findings indicate that occupational significant others do not base their expectations on socioeconomic status characteristics of respondents as much as do educational significant others.

The main features of the effects of SOI on career plans observed for the objective significant other model correspond to results obtained in the perceived significant other model. For black youth socioeconomic status and academic performance are more important for influencing career plans than mental ability, and vice versa for white youth. For whites, significant other influence exercises the largest effect on both educational and occupational plans, but for blacks, significant other influence is an important determinant of educational expectations but not occupational expectations. This general pattern of results is similar to those observed for the perceived model (Table 4). Specifically, the effects of perceived significant other influence on educational expectations for whites is more than twice the effect observed for blacks (.583 vs. .291). Similar results were obtained for occupational expectations. In fact, in the perceived SOI model, black youths' significant others exercise relatively little influence for occupational expectations. The model estimates career plans of white respondents more accurately than it does for black respondents. Finally, educational plans can be estimated more accurately than occupational plans. The failure of the perceived SOI model to estimate occupational plans as accurately as educational plans may be due to something besides the fact that the perceived SOI variables make reference to education but make no reference to occupation.

Accuracy of the models for the ultimate dependent variables was not inflated much by substituting objective SOI for perceived SOI. For example, the multiple coefficient of determination (R^2) for educational expectations of white youth was .489 when perceived SOI was utilized and .511 when objective SOI was employed. However, the objective measure was more successful in absorbing effects of background variables on educational plans than the perceived measure. For black students, the direct effect of SES on educational expectations estimated in the reduced model was .285; thus, the indirect effect of SES in the objective SOI model becomes .104 (.285 x .181). Virtually all of this indirect effect operates in a two step process from socioeconomic status to SOIE to educational expectations (.110 = (.392) (.218)).[4] The direct effect of academic performance on educational expectations for blacks has also been reduced by substituting objective SOI for perceived SOI. In the perceived model the effect of academic performance (AP) on educational expectations (EE) of blacks was .252; this value was reduced to .184 for the objective SOI model. Similar results can be observed for educational expectations of white youth. Coefficients indexing the effects of socioeconomic status and academic performance approach zero. For socioeconomic status, practically all the total effects operate indirectly via SOIE (.376 x .583 = .219). The total effect was .231. For white students the direct effect of mental ability on educational plans was .252, whereas, the total effect was .511. Thus, more than 50 percent of the total effect was indirect. Of this indirect effect, nearly seven tenths (.301 x .583 = .175) follows a two step route through objective significant other influence for education (SOIE).

For occupational expectations, the results of replacing perceived significant other influence by objective significant other influence were not as satisfying as those observed for educational expectations. The direct effect of socioeconomic status on occupational expectation for blacks remains about as large as the total effect (.325 = direct effect vs. .345 = total effect, comparing Tables 1 and 6). The estimate of the direct effect of socioeconomic status on occupational expectation for whites is actually greater when objective occupational expectations of significant others for ego (SOIO) are substituted for perceived SOI (compare .213 for SOIO to .139 for PSOI).

It should also be noted that in the equations for occupational plans for both the perceived and objective significant other models, the sign of the coefficient for mental ability of blacks and for academic performance of whites are negative, counter to *a priori* expectations. Only the coefficient indicating the effect of academic performance on occupational plans of white youth obtained statistical significance however. Interpretations of this observation are risky at best. It is essential to keep in mind that the negative effect is the direct effect only; the total effect of academic performance of whites on occupational expectations is positive. It would undoubtedly be possible to invent a substantive explanation for this unexpected result; however, until the observation is confirmed in other data it is safer to reserve judgment. Any data of the sort analyzed here are fallable. Sampling error may account for the negative value, the fact that the coefficient is of large enough magnitude to be statistically significant not withstanding. Further, it would take only a modest degree of measurement error to produce the sign reversal observed here.

Disaggregated Versions of the Perceived and Objective SOI Models: Both perceived and objective forms of significant other influence are averages of the attitudes and behavior of numerous individuals who are presumed to be significant in molding career plans of youth. It is quite possible that the influence of significant others differs according to the relationship of the significant other to ego. The composite measures would not reveal such differences. In this subsection, therefore, both perceived and objective SOI are decomposed into components. Perceived SOI (PSOI) is broken out into three separate variables:

1. the college plans of peers (PP);
2. teachers' encouragement to attend college (TEE);
3. parents' encouragement to attend college (PEE).

The two objective SOI measures are each separated into two components:

1. parents' educational/occupational expectations for their son;
2. nonparental significant others' educational/occupational expectations for ego.

The models presented in the previous two subsections are carried into the disaggregated models of this section except that here the components of each SOI measure are substituted for the aggregate measure. Table 7 shows the standardized path-regression coefficients indexing the effects of perceived significant other influence on educational and occupational plans. Table 8 presents the effects of objective significant other influence on career plans.

The perceived SOI data shown in Table 7 demonstrates racial differences in the effect of the disaggregated SOI. For blacks, peer plans receive a somewhat stronger weight in determining educational expectations than does parental educational encouragement (.192 for peer plans vs. .162 for parents), while the pattern reverses for whites (.251 for peer plans vs. .309 for parents). Peer plans also receive a stronger weight in the equation for occupational expectations of white youth than does parental educational encouragement (.304 for peer plans vs. .156 for parents). But none of the coefficients for the perceived SOI variables were found to be statistically significant for the occupational plans of blacks.

In examining the coefficients of determination for SOI variables, one notes that they are, at best, poorly explained. For blacks, neither teachers' encouragement (TEE) nor peer plans (PP) are significantly affected by the antecedent variables, and parental encouragement (PEE) is only affected by academic performance. For whites, SES and AP predict parental encouragement (PEE), SES and MA predict peer plans (PP), but teachers' encouragement (TEE) is essentially unexplained. In short, the data does not strongly support perceived significant other influence as intervening variables.

Turning to the objective disaggregated SOI model (Table 8), the distribution of effects of the significant other variables was

TABLE 7: Disaggregated Perceived Significant Other Influence Model, By Race

Dependent Variables	Independent Variables													
	SES		MA		AP		PEE		TEE		PP		R^2	
	B	W	B	W	B	W	B	W	B	W	B	W	B	W
AP	-.022 (.118)	.095 (.278)	.410* (.402)	.521* (.482)									.162	.241
PEE	.109 (.094)	.256* (.343)	-.128 (.004)	.205 (.308)	.240* (.212)	.104 (.244)							.063	.159
TEE	.063 (.082)	.083 (.176)	.136 (.102)	.100 (.206)	-.089 (-.023)	.145 (.228)							.018	.072
PP	.143 (.114)	.194* (.368)	-.074 (-.003)	.513* (.502)	.058 (.043)	.006 (.263)							.017	.286
EE	.246* (.306)	.087 (.409)	.078 (.237)	.234* (.520)	.236* (.315)	.125* (.391)	.162 (.278)	.309* (.539)	-.022 (.113)	.196 (.234)	.192* (.273)	.251* (.535)	.245	.501
OE	.358* (.338)	.128 (.378)	-.093 (.170)	.301* (.468)	.347* (.319)	-.078 (.201)	-.058 (.077)	.156* (.373)	.110 (.105)	-.003 (.164)	.045 (.017)	.304* (.516)	.210	.370

* Significant at $p(\alpha) \leq .05$ for a one-tailed test.

Variable List:

SES - composite index of socioeconomic status
MA - mental ability
AP - academic performance
PEE - perceived parental educational encouragement
TEE - perceived teachers' educational encouragement
PP - perceived college plans of peers
EE - educational expectations of ego
OE - occupational expectations of ego

found to be uneven across the components of significant other influence. In the objective models, the effect of parents' educational expectations on ego's educational expectations for white respondents is more than seven times greater than the effect of the expectations of nonparents (.707 for parents vs. .054 for nonparents). In fact, the effect of parents' educational expectations for their sons on the sons' educational expectations is over four times larger than the next highest coefficient, that being the effect of mental ability (.173). On the other hand, effects on educational expectations of black youth are more evenly spread between parental and nonparental significant others, but the effects of nonparental expectations are greater than the effects of parental expectations -- a reversal of the pattern observed for whites. When the objective SOI model of occupational plans is considered, the racial differences observed for educational plans reverse themselves. For whites, significant individuals, other than parents, are more important than parents for influencing occupational expectations, while for blacks, parents are more important than nonparental significant others.

In summary, when the objective SOI model is considered, the patterns of influence on career decisions of black and white male youth are quite different. Black children are influenced by both parents and nonparents in the formation of educational plans but predominantly by parents in the formation of occupational plans. On the other hand, white youth are influenced predominately by parents in the formation of educational plans but predominately by nonparents in the formation of occupational plans.

The theoretical expectation that the influence of background on the career plans of youth is channeled through socialization processes works fairly well when the disaggregate objective SOI model is applied to educational expectations of white youth. The two significant other variables for education (EEP and EENP) can be estimated fairly accurately by the prior variables of family status, mental ability, and academic performance (R - squares are close to .5). Thus, the early links in the chain are reasonably strong. The direct effect of socioeconomic status (-.057) on educational expectations of whites is essentially zero. The total effect is .231 of which the dominant part acts through parents' educational expectations for their sons (indirect effect via EEP = .255 = (.361) (.707).[5] Effects of mental ability on educational plans of white youth also are channeled through parents' educational expectations for their sons. The total effect of mental ability on educational expectations of whites is .511 which is reduced in the direct effect to .173. The indirect effects sum to .338 of which .243 (.253 = (.343) (.707)) flows from mental ability to parents' educational expectations for ego to ego's own educational expectations. Another sizeable part of the indirect effect of mental ability operates through academic performance, then through parents

TABLE 8: Disaggregated Objective Significant Other Influence Model, By Race

Dependent Variables	SES		MA		AP		EEP		EENP		OASP		OASNP		R^2	
	B	W	B	W	B	W	B	W	B	W	B	W	B	W	B	W
AP	-.022 (.118)	.095 (.278)	.410* (.402)	.521* (.482)											.162	.241
EEP	.384* (.406)	.361* (.567)	.045 (.322)	.343* (.564)	.436* (.463)	.256* (.500)									.341	.506
EENP	.302* (.365)	.321* (.589)	.124 (.337)	.229* (.494)	.288* (.371)	.404* (.557)									.254	.461
OASP	.231* (.304)	.164* (.364)	.259* (.381)	.354* (.492)	.257* (.345)	.254* (.447)									.225	.324
OASNP	.050 (.176)	-.075 (.152)	.331* (.409)	.278* (.440)	.212* (.332)	.499* (.585)									.203	.379
EE	.120 (.306)	-.057 (.409)	-.005 (.237)	.173* (.520)	.109 (.315)	-.042 (.391)	.198* (.499)	.707* (.764)	.316* (.479)	.054 (.592)					.295	.599
OE	.305* (.338)	.242* (.378)	-.120 (.170)	.351* (.468)	.266* (.319)	-.276* (.201)					.201* (.344)	.081 (.455)	.016 (.162)	.390* (.447)	.231	.383

Independent Variables

* Significant at $p(\alpha) \leq .05$ for a one-tailed test.

Variable List

SES - composite index of socioeconomic status
MA - mental ability
AP - academic performance
EEP - educational expectations of parents
EENP - educational expectations of nonparents

OASP - occupational expectations of parents
OASNP - occupational expectations of nonparents
EE - educational expectations of ego
OE - occupational expectations of ego

expectations for ego, and finally to educational expectations of ego for himself (.094) = (.521) (.256) (.707)). The total effect of mental ability on educational expectations of white youth is .511; of this, a sum of .337 (.243 + .094) flows through parents' expectations for their son's education. Academic performance assumes a modest role in this process, serving to transmit effects of mental ability to parents' educational expectations for ego which, in turn, impact on ego's educational expectations for himself.

For black youth, socioeconomic status exercises a substantially stronger total effect on educational expectations than does mental ability (total effect of SES = .285 vs. total effect of MA = .161). The direct effect of SES for blacks reduces from a total effect of .285 to .120 in the disaggregate objective SOI model. Unlike the whites, however, nonparental significant others of blacks are more important than parents in shaping educational expectations. Still, both parents and nonparents are important links in the causal chain. The two-step indirect effects of SES on educational expectations, operating either through parental or nonparental significant others, sum to .171. Of this, .095 (.302 x .316 = .095) operates through nonparental significant others. The total effects of mental ability on educational expectations of blacks are too small to sustain interpretation of intervening links.

The data for blacks also lend support to the idealized theoretical model which views the effects of background on career plans as operating via intervening socialization links. A larger part of the total effect of SES of black respondents on educational expectations operates indirectly rather than directly. Further, most of the indirect effects channel through one of the forms of significant others influence.

On the other hand, the data for occupational plans do not reinforce the intervening variable model of the process of forming career plans. For black youth, the total effect of SES on occupational expectations is .345. This figure only reduces to .305 when academic performance, parental and nonparental SOI are introduced into the equation. Similarly, the total effect of mental ability on occupational expectations is .457 for whites and reduces to .351 when the intervening variables are statistically "controlled." The total effect and direct effect of socioeconomic status on occupational plans of white youth are also fairly close in magnitude, the total effect being .220 and the direct effect being .242. In fact, the perceived SOI model is more successful in reducing the total effect of family status on occupational plans of white youth than is the objective model -- in the perceived model the direct effect of SES on occupational expectations is .128, about half of its total effect.

Comparing the perceived and objective models, it should be noted that without exception the multiple coefficients of determination (R^2) are higher for the objective significant other models than for the perceived models, indicating that career plans of youth can be more accurately estimated from significant others' own report of their attitudes and behavior than by ego's report. Except for occupational expectations of white youth, the direct effects of background variables are lower for the objective SOI models than for the perceived SOI models. In addition, the objective SOI model for occupational plans is the first to show any substantial effect of significant other influence on the occupational expectations of black youth. The implications of these observations seem clear, *the objective significant other models are superior to the perceived models*. Also, keeping parents and nonparents in a single composite variable appears to obscure the different manner in which the components operate between the two races and between educational and occupational expectations. Therefore, for the remaining analysis in this report parental and nonparental objective significant other influence are treated separately for both educational and occupational plans.

Analysis of Correlations among Residuals: Table 9 presents correlations among residual variables for the disaggregated significant other mode. For both blacks and whites, the correlations between residuals for the significant other influence (SOI) variables are statistically significant. (For the correlations among residuals between EEP, EENP, OASP, and OASNP, each pair of variables has the same set of prior variables. Hence, they can be interpreted as partial correlations and the standard statistical test would apply.) The SOI variables are not being explained very well. The large residuals suggest that other variables not included in the model are important in the prediction of SOI or that the SOI variables are enmeshed in an reciprocal causal system.

The model, however, is one designed to predict educational and occupational plans. The correlations between the residuals for educational and occupational expectations are most important in terms of evaluating the accuracy of specification for each model. For blacks, the correlation (.203) between the residuals associated with educational and occupational goals implied that other factors, which have not been included in the model, are important or in the case of SOI variables, that there is some reciprocal effect of the two types of plans on each other. The latter possibility seems fairly likely but it is difficult to assess with cross-sectional data. The correlation between residuals associated with educational and occupational plans (.085) for whites supplies further evidence of the correct specification of the model and the appropriateness of the variables that are included in the model. The moderate correlations among residuals for EE and EEP for blacks (.286) and whites (.251) suggest the inclusion of the linkage (EEP to EE) in

Table 9: Correlations Among Residuals for the Disaggregated Objective SOI Model, By Race

BLACKS

	EEP	EENP	OASP	OASNP	EE**	OE**
EEP	1.000	.362*	.445*	-.024	0.0	.286
EENP		1.000	.242*	.521*	0.0	.129
OASP			1.000	.100	-.001	0.0
OASNP				1.000	-.180	0.0
EE					1.000	.203
OE						1.000

WHITES

	EEP	EENP	OASP	OASNP	EE**	OE**
EEP	1.000	.523*	.511*	.511*	0.0	.251
EENP		1.000	.352*	.528*	0.0	-.018
OASP			1.000	.582*	.122	0.0
OASNP				1.000	.121	0.0
EE					1.000	.085
OE						1.000

* Significant at $p\ (\alpha) \leq .05$ for a one tailed test.

** The correlations among residuals between EE and OE and the other variables cannot be interpreted as partial correlations since they lack the same set of prior variables. Hence, no standard statistical test applies.

Variable List

EEP - Mean Parental Educational Expectations
EENP - Mean Non-parental Educational Expectations
OASP - Mean Parental OAS
OASNP - Mean Non-parental OAS
EE - Educational Expectations
OE - Occupational Expectations

the SOI model. However, no conclusive argument can be made for the inclusion of the linkage since it's difficult to evaluate the strength of the correlations without an appropriate statistical test. Thus, the existence of a viable model for whites is supported, while a model for blacks has not been well specified.

Additional Variables

Two variables, educational values (EV) and academic self-concept (ASC), are introduced into the equations predicting educational and occupational expectations. (The titles of the variables probably are sufficiently descriptive. For a more complete description, see Appendix C.) They are not presented as part of a path model because their "position" in a recursive model of career decision is not clearly implied in any theoretical or empirical work of which the authors are aware. In several instances, it is difficult to determine even the dominant direction of effect in pairing academic self-concept or educational values with other independent variables in the models. For example, it seems reasonable that academic self-concept affects and is affected by academic performance. The results of the multiple regression analyses are presented in Table 10.

The two social-psychological constructs prove statistically significant in the prediction of educational expectations of whites only. More important, however, is the fact that the addition of these variables does not reduce below statistical significance any effect which was significant in the disaggregated objective SOI model, although the explained variance is somewhat increased in all four cases. The emergence of a negative significant effect of academic performance on educational expectations for whites is not readily explainable as a substantive finding. Finally, the addition of these variables does nothing to reduce the disparity in explained variance between the black and white models.

Table: Regression Analysis Incorporating Academic Self Concept and Educational Values

Independent Variables	Dependent Variables			
	Educational Expectations		Occupational Expectations	
	Black	White	Black	White
SES	.144 (.306)	-.108 (.409)	.317* (.338)	.248* (.378)
MA	-.017 (.237)	.141* (.520)	-.120 (.170)	.320* (.468)
AP	.112 (.315)	-.136* (.391)	.269* (.319)	-.339* (.201)
EEP	.181* (.449)	.627* (.764)		
EENP	.269 (.479)	.045 (.592)		
OASP			.177* (.344)	.060 (.455)
OASNP			-.092 (.162)	.367* (.447)
EV	.154 (.308)	.173* (.363)	.143 (.220)	.106 (.182)
ASC	.017 (.205)	.151* (.510)	-.049 (.119)	.111 (.367)
R^2	.311	.643	.247	.403

* Significant at $p\ (\alpha) \leq .05$ for a one-tailed test.

Variable List

SES - composite index of socio-economic status
MA - mental ability
AP - academic performance
EEP - educational expectations of parents
EENP - educational expectations of nonparents
OASP - occupational expectations of parents
OASNP - occupational expectations of nonparents
EE - educational expectations of ego
OE - occupational expectations of ego

Summary

This chapter has followed the strategy of analyzing separately, for blacks and whites, the way in which intervening variables "absorb" the effect of selected exogenous variables on the dependent variables, educational expectations, and occupational expectations. The two dependent variables are construed as proxies for career decisions of the young males in the sample. The reduced model selected as offering the best compromise between parsimony and explained variance was one in which an aggregate measure of socio-economic origins (SES) and mental ability (MA) were treated as exogenous.

The analysis of models in which alternate measures of significant other influence (perceived, aggregated, and disaggregated, and objective, aggregated, and disaggregated) were introduced as intervening variables along with academic performance. Although none of the models explored can be considered completely satisfactory, the findings do suggest that the best model employes objective disaggregated measures of significant other influence as independent variables estimating educational and occupational goals; both from the perspective of overall reduction of the direct effects of exogenous variables on educational and occupational plans and the increased explained variance. This model works better in estimating the career decisions of whites than of blacks. Further, it works better in explaining educational plans than in explaining occupational plans for both blacks and whites. Finally, the addition of two social-psychological variables, educational values and academic self-concept, to the regression equations for educational and occupational expectations fails to support their inclusion in an expanded model of career decision-making.

FOOTNOTES

[1] Sibling order was also included in preliminary data analyses not reported here. Sibling order is highly correlated with family size, but family size is more highly correlated with the dependent variables than is sibling order. Hence, family size was retained. See Appendix C for details of the operational procedures used to define each variable.

[2] The coefficients in Table 1 index the "total effect" of the background variables on career plans.

[3] A brief methodological note on the usefulness of the standardized path-regression coefficients is, perhaps, in order here. The main feature of the data in Table 1 is that the effects of status on career plans are greater than the effects of mental ability for blacks, but the effects of mental ability are stronger than the effects of status for whites. This conclusion requires a simultaneous comparison of coefficients _between variables_ and _between races_, a type of comparison not strictly permitted by either unstandardized path-regression coefficients or path coefficients which have been standardized within each sample. The standardized path-regression coefficients, on the other hand, are perfectly suited to simultaneous comparisons between variables and between subsamples, for they are calculated on a scale which is common to all variables and to all subsamples.

[4] The small negative coefficient connecting SES and AP for blacks accounts for the fact that the indirect effect of status via SOIE is slightly larger than the overall indirect effect of status. Note that the negative path from SES to AP is not statistically significant.

[5] Again, the fact that the indirect effect is larger than the total effect is due to small (not statistically significant) negative coefficients in the system.

CHAPTER VI

Summary, Conclusions, and Inferences

Introduction

The analysis in the preceding chapters provides a framework from which measurement, theory, and development inferences may be made. It is the objective of this chapter to reiterate the findings of the analyses in summary fashion and extract those inferences which seem warranted.

The reader is reminded that this work has taken the question "What is the role of significant other influence in the career decision-making process of black and white high school sophomore males?" as its basic point of departure. Several specific questions are addressed in the data analyses, all related to the basic question. These include:

1. Do the number of significant others vary by race or socioeconomic origins?
2. Do the role relationships of ego to significant others vary by race or socioeconomic origins?
3. Can the child's report of encouragement to achieve education beyond high school be construed as an adequate index of educational influence?
4. What is the importance of significant other influence on career plans as compared to the importance of socioeconomic origin, mental ability, and academic performance?
5. Are different patters of significant other influence manifest for black and white male youth?

These questions essentially summarize the basic thrust of the analyses presented in Chapters IV and V.

The confidence which may be vested in the findings and inferences of this research must be tempered by the limitations of the research. The major limitations are presented here so as to provide the reader a sensitizing frame of reference within which to evaluate the findings and inferences. .

The first limitation of the research is the sample *per se*. Having been drawn from a single city in the Midwest, it cannot be assumed to be representative of any specifiable population. While limited analysis of characteristics of parents (see Appendix A) leads the researchers to believe that the findings presented herein are not greatly different from those one would find drawing a similar sample from another metropolitan area in the United States, it would strain credulity to claim it as representative. Since a primary objective of the research was to investigate possible black-white differences with reference to significant other influence, a balanced sample by race was necessary. This further obviates claims to representativeness.

The most important limitation of the research is that the sample is cross-sectional (i.e., drawn at a single point in time). This limits analysis of significant other influence to the question of how different levels of influence result in different levels of career planning across individuals. However, it does not address the question of how different levels of influence result in different levels of career planning within individuals over time.

Another result of cross-sectional analysis is that reciprocal effects cannot be investigated. For example, it seems likely that individuals' academic performances affect the educational expectations significant others hold for them but it seems equally likely that the communication of those expectations to individuals affect their academic performances in return. Researchers are consequently faced with the delemma of investigating one way effects and using their "best judgment" as the dominant direction of effects or to attempt interpretation of "instantaneous reciprocal effects" in such a situation. Wherever possible, the former has been the direction taken in this endeavor.

The fact that much of the analysis in chapter four is not amenable to test statistics constitutes another limitation to the study. This fact means that the basis for assessing "meaningful" differences is more amorphous than usual. Judgment, therefore, plays a greater role in the analysis and the possibility for disagreement is increased.

The above limitations must remain as a "conditioning background" as the reader approaches the remainder of this chapter.

Summary of Findings

A rather detailed summary of findings is presented in the following narrative. Chapter IV attempted to identify and explain variations in the number of significant others by which individuals are influenced and the role relationships between individuals and their significant others. Chapter V attempted to develop a model of career decision-making which has implications for career guidance. This summary is intended to remind the reader of the major points covered in the analyses in chapters IV and V and provide a foundation for the inferences and conclusions to follow.

Analysis of the number of significant others fails to demonstrate appreciable differences between blacks and whites in the percentage of significant others held by individuals in the sample. This finding remains when controls are added for type of influence (educational or occupational), mode of influence (model or definer), education of father, and education of mother. When role relationships between ego and significant others are analyzed, the nuclear and extended family prove to be primary sources of significant other influence. This is true for both blacks and whites. For both blacks and whites, parents collectively constitute the modal source of definer influence but not model influence. Teachers comprise a relatively large proportion of the educational models for both, but not of the occupational models. They are not often named as definers, however. Guidance counselors do not account for an appreciable proportion of the significant others in either type of mode of influence. In short, the analysis suggests that blacks and whites select approximately the same numbers of significant others and the primary source of their significant others is familial (nuclear and extended).

This summary of chapter V employs the strategy of focusing primarily on identification of statistically significant effects for blacks and whites, respectively, at each stage of the model building. This strategy runs the risk of ignoring differences of magnitude which may be of substantive importance. On the other hand, it provides the advantage of concise statements highlighting similarities and differences between blacks and whites which might be ignored when attention is focused primarily on the relative magnitude of effects. However, differences of magnitude which appear to be important will be noted.

The first phase of analysis seeks to identify an optimum reduced model of career decision-making. Inspection of alternative reduced models suggests that a model including an aggregate measure of socioeconomic origins and mental ability as predictors of educational expectations and occupational expectations is best suited for the purposes of this research. Analysis employing this reduced model yields the following results:

1. Socioeconomic origins significantly predict the career plans for both blacks and whites but the effects are stronger for blacks,

2. Mental ability significantly predicts the career plans of whites only,

3. The model is more effective in explaining the career plans of whites (i.e., coefficients of determination are larger for whites).

When a model containing academic performance and an aggregate measure of perceived significant other influence in addition to the background variables is introduced, the following results obtain:

1. Aggregate perceived significant other influence has a significant effect on the educational plans of both blacks and whites,

2. Aggregate perceived significant other influence has a significant effect on the occupational plans of whites only,

3. Academic performance has significant effects on educational expectations and occupational expectations of blacks only,

4. Aggregate perceived significant other influence is significantly affected by socioeconomic origins and mental ability for whites, but none of the antecedent variables (socioeconomic origins, mental ability, academic performance) significantly affect aggregate perceived significant other influence for blacks,

5. Academic performance is significantly predicted by mental ability for both blacks and whites,

6. The addition of academic performance and aggregate perceived significant other influence to the model reduces the effects of socioeconomic origins and mental ability on educational expectations and occupational expectations, but with the exception of the effect of socioeconomic origins on educational expectations for whites, the effects which were significant in the reduced model remain significant in this model,

7. Career plans of blacks continue to be "less accurately estimated" by the model.

Replacing perceived significant other influence with two objective measures, significant others' educational expectations and significant others' occupational expectations, has the following results:

1. Aggregate objective significant other educational expectations have a significant effect on the educational expectations of both blacks and whites,

2. Aggregate objective significant other occupational expectations have a significant effect on the occupational plans of whites only,

3. Academic performance has a significant positive effect on both educational and occupational expectations of blacks, but a significant negative effect on the occupational expectations of whites,

4. Aggregate objective significant other educational expectations are significantly affected by socioeconomic origins and academic performance for blacks and by socioeconomic origins, mental ability, and academic performance for whites,

5. Aggregate objective significant other occupational expectations are significantly affected by socioeconomic origins, mental ability, and academic performance for blacks and by mental ability and academic performance for whites,

6. Although the direct effects of socioeconomic origins and mental ability on educational and occupational expectations are reduced, effects significant in the reduced model remain significant with the exception of the effect of socioeconomic origins on educational expectations for whites,

7. This model does not explain the career plans of blacks as well as it explains the career plans of whites.

The disaggregation of perceived significant other influence into its components, parents' educational encouragement, teachers' educational encouragement, and peer plans has the following consequences for the model:

1. Parents' educational encouragement and peer plans significantly affect the occupational and educational plans of whites, and peer plans significantly affect the educational plans of blacks,

2. Academic performance significantly affects both educational and occupational expectations for blacks but only educational expectations for whites,

3. Parental educational encouragement is significantly affected by academic performance for blacks and socioeconomic origins for whites,

4. Teachers' educational encouragement is not significantly affected by any of the antecedent variables for either blacks or whites,

5. Peer plans are not significantly affected by any of the antecedent variables for blacks, but are significantly affected by socioeconomic origins and mental ability for whites,

6. The effect of socioeconomic origins on educational and occupational expectations drops below significance for whites but not for blacks,

7. Mental ability continues to significantly affect the educational and occupational expectations for whites,

8. The explained variance of educational and occupational expectations is slightly increased by the disaggregation of perceived significant other influence for both blacks and whites,

9. The model continues to explain more of the variance in educational and occupational expectations for whites than blacks.

Disaggregation of objective significant other influence variables into parents' educational expectation, nonparents' educational expectations, parents' occupational expectations, and nonparents' occupational expectations produces results as follows:

1. Parental educational expectations significantly affect the educational expectations of both blacks and whites but nonparental educational expectations significantly affect the educational expectations of blacks only,

2. Parental occupational expectations significantly affect the occupational expectations of blacks and nonparental occupational expectations significantly affect the occupational expectations of whites,

3. Academic performance significantly affects the occupational plans of blacks and whites, but the effect is positive for blacks and negative for whites,

4. Parental educational expectations are significantly affected by socioeconomic origins and academic performance for blacks and by socioeconomic origins, mental ability, and academic performance for whites,

5. The pattern of prediction of nonparental educational expectations is the same as the pattern of prediction of parental educational expectations for blacks and whites,

6. Parental occupational expectations are significantly affected by socioeconomic origins, mental ability, and academic performance for both blacks and whites,

7. Nonparental occupational expectations are significantly affected by mental ability and academic performance for both blacks and whites,

8. The effect of socioeconomic origins on educational expectations is reduced below significance for both blacks and whites but occupational expectations are significantly affected by socioeconomic origins for both groups,

9. Mental ability continues to significantly affect both educational and occupational expectations of whites,

10. Disaggregation of objective significant other influence serves to increase the explained variance of educational and occupational expectations of both blacks and whites,

11. This model also explains a greater portion of the variances of educational and occupational expectations of whites than blacks.

Analysis of the correlations among residuals for the disaggregated objective significant other model yields the following results:

1. Correlation between the residuals of educational and occupational expectations for whites appears to be inconsequential but for blacks the correlation is large enough to suggest that an effect, important to the model, has been omitted,

2. The correlation between the residuals of parents' educational expectations and the childs' occupational expectaions for both blacks and whites is strong enough to suspect that parents influence the occupational plans of their children through the educational expectations they hold for them,

3. The correlations between the residuals for the expectations of parents and nonparents (for both education and occupation, black and white) are of sufficient magnitude to suggest that the model is somehow misspecified with reference to the explanation of parents and nonparents expectation for ego.

The introduction of academic self-concept and educational values as independent variables in the equations for educational and occupational expectations fails to suggest that these "new variables" are important to the explanation of the career decision-making process. This is based on two findings. First, the two variables demonstrate significant effects only on the educational expectations of whites. Second, the explained variance is not greatly increased for educational or occupational expectations of blacks or whites when the two variables are added.

In reviewing the findings, the researchers concluded that the disaggregated objective significant other influence model represented the "optimum explanation" of the formation of career plans in terms of the data analyzed. This conclusion is based on the considerations of explained variance, the "network" of effects in the model and parsimony. Therefore, discussion of theoretical and developmental implications will center around the findings of the disaggregated objective significant other influence model.

Implications for Theory and Measurement

The pattern of effects for the disaggregated objective significant other influence model for blacks and whites are strikingly similar up to the point of significant other expectations. The only difference (the failure of I.Q. to significantly affect the educational expectations held for blacks by parents and nonparents) is, perhaps, informative. While it is tempting to assume that significant others of black children are "less sensitive" to the implications of skills measured by I.Q. tests, the significant effects of I.Q. on the occupational expectations held for black children by both parents and nonparents makes such an assumption implausible. The findings of this research suggest that significant others consider the black child's ability to perform in the white man's world (as indicated by academic performance) more important for academic success than the more general intellective skills as measured by I.Q.

For both blacks and whites, socioeconomic status influences the level of expectation held for the child except for the level of occupational expectation held by nonparents. Nonparental occupational significant others tend to reflect the argument of Merton (1957:136) and Williams (1969:454) to the effect that in the United

States, success goals are emphasized to the neglect of the institutional means of their attainment. That is, by dint of "accounting" for socioeconomic status in stating educational expectations for children but ignoring that factor in stating occupational goals for them, nonparent significant others are saying to young people that their occupational attainment need not be limited by their socioeconomic origins or educational achievement.[3] While there is some truth in such a contention, it is only a partial truth as shown by research such as that of Blau and Duncan (1967), Duncan, Featherman, and Duncan (1968), and Kerckhoff (1971).

Given the similarity of structure of effects on significant other influence for blacks and whites, it is somewhat surprising to note the degree to which the explained variance (R^2) of significant other influence variables for whites exceeds the explained variance of those variables for blacks. In no case is the proportion of explained variance for blacks more than 70 percent of the explained variance for whites. This suggests that while blacks establish levels of expectation for achievement for young people on a basis similar to those of whites, they place less confidence in the factors measured herein as indicators of the young person's potential. Such an interpretation is not inconsistent for a group which has traditionally experienced discrimination with reference to educational and occupational opportunities. That interpretation is further strengthened by the fact that 88 percent of the significant others who are definers for black youth in the sample are black. On the other hand, the explanation may be as simple and as complex as differential measurement error for blacks and whites.

Interpretations proferred from findings, thus far, must be taken with care. The fact that the residuals of the significant other influence variables are, with one exception, significantly correlated for both blacks and whites suggests that the model may not be well specified. Whether a model sufficiently well specified to reduce those correlations to non-significance would yeild results leading to the same interpretations remains an empirical questions.

The issue of central concern in this research is how the prior variables discussed above impact on the career plans of black and white young people. At this point, the pattern of effects is considerably less similar between blacks and whites than is the pattern of effects on significant others' expectations for ego. It is at this point that the model may be evaluated as an explanatory device.

For both groups, however, the effects of significant other influence on career expectations are quite strong. In fact, with the exception of the effect of significant other influence on occupational expectations for blacks, some significant other variable has the strongest direct effect on career expectations of all variables considered. These effects do not serve to eliminate all direct effects of prior variables, however. For blacks, socioeconomic status and academic performance demonstrate significant direct effects on the occupational expectations of young people. For whites, I.Q. manifests a significant direct effect on educational expectations and socioeconomic status, while I.Q. and academic performance have significant direct effects on occupational expectations.

When attention is focused on educational expectations, the model seems to work rather well. For blacks, both parent and nonparent influence demonstrate significant effects on educational expectations. No prior variable (socioeconomic status, I.Q., and academic performance) demonstrates a significant direct effect on educational expectations for this group. For whites, only parents' influence has a significant effect on educational expectations. Additionally, I.Q. manifests a significant direct influence on educational expectations. However, of all background variables with a significant direct path leading to educational expectations, the indirect effect of prior variables through significant other influence variables are always greater than the direct effect. This being true for both blacks and whites suggests that the model works reasonably well in explaining the mechanism by which background influences levels of educational expectations via significant other influence. The fact that black young people are influenced through both parent and nonparent SOI while white young people appear to be influenced exclusively through parents' SOI in setting their educational expectations suggests that the development of educational expectations among black young people is based on a broader matrix of interpersonal influence.

The occupational expectations of young people are not nearly so well explained by the model. Although one of the significant other influence variables has a significant direct effect for both blacks and whites, the significant other influence effect is the largest effect in the equation only for whites. Furthermore, none of the indirect effects of the prior variables through the significant other influence variables are as large as the direct effects of the prior variables on occupational expectations. This is true for both blacks and whites. These results suggest that the model is not well specified with reference to explanation of the occupational expectations. Suggested respecification is derived from two sources. The first is suggested by the work of Kerckhoff (1971). The second is based on inference from the anlysis of correlations among residuals in the disaggregated objective significant other model.

Kerckhoff (1971) treats educational expectations as causing occupational expectations. He argues that one must determine the amount of education he will achieve in setting occupational goals and that young people have a greater experiential basis for setting educational goals (Kerckhoff, 1971:37). The effect of educational expectations on occupational expectations is substantial in his models and increases as one moves from a sample of sixth graders to a sample of twelfth graders. In addition, the effect of socioeconomic status and I.Q. on occupational expectations are greatly reduced (Kerckhoff, 1971:39). However, only a longitudinal sample demonstrating a significantly greater effect of educational expectations on occupational expectations than the obverse across time would be convincing.

Analysis of the correlation of residuals of the disaggregated objective significant other influence model suggests an alternate specification of the equation for occupational expectations. For both blacks and whites, the correlation of the residuals for parents' educational and occupational expectations for the child is greater than the correlation of the residuals of the child's educational and occupational expectations. One explanation for this observation is that the child's educational and occupational expectations are not causally linked to one another but are both causally linked to parents' educational expectations. On the other hand, the difference in the two residual correlations may be simply due to the greater number of control variables for the child's educational expectations as compared to parents' educational expectations. Such models should be tested on a new sample.

Inferences from the foregoing analysis must center primarily on the development of educational expectations. The antecedents of levels of expectations of significant others have already been discussed. Typically they are established on the basis of a combination of the child's socioeconomic origins and some index of ability (academic performance or I.Q.). Noting, then, that the child's educational expectations rest primarily on significant other influence, one is led to view significant others as "translators" of the social world to young people. That is, the child does not develop educational plans so much out of his own evaluation of his opportunity and ability but rather out of the interpretation given to his opportunity and ability by the levels of expectation held for him by significant others. To the degree that the educational plans result in attainment, significant others become perpetuators of the social "structure."

Turning to a second issue of educational plans of these young people, it has been noted that the educational plans of blacks are less accurately estimated than those of whites. The reasons for this phenomena cannot be determined by this research. Explanations, therefore, are speculative and must be taken as tentative. Three different bases for the difference are briefly discussed below, centering on the themes of development, fatalism, and measurement.

The difference in explained variance of educational expectations of black and white young people may be due to a differential rate of development with regard to educational planning. It will be recalled that several development theories suggest that young people move from levels of low reality based career planning to career plans based to a high degree on the exegencies of their own life situation as they mature. Recent empirical work by Kerckhoff (1971, 1974) suggests that this conceptualization may be viable. Minority status could, conceivably, result in retardation of the development process. First, the typically low educational opportunity and low economic status of blacks restricts participation in the economic and social system. This results in a relatively weaker information base on which to develop career plans.[4] Secondly, the child's own awareness of the way in which the social definition of minority group status affects both himself and the majority of his significant others may cause him to be less certain of the evaluations of his significant others and to postpone setting concrete career plans.

An equally plausible argument states that black young people develop their career plans earlier than white youth. This argument would stem from the reality of minority status and its associated discrimination. That is, black young people faced with survival in a social world in which they have traditionally received less educational and occupational opportunity than their white counterparts, may be forced, early on, to crystalize their career plans, the expectancy of which are not based on family origin or ability, but rather on the exigencies of a white dominated power structure. Such an argument would also offer an explanation for the lower explained variance of the educational and occupational plans of the black males. The polarity of the two developmental arguments presented above which lead to the same conclusion, points up the need for careful empirical investigation before research findings can be used with confidence to suggest policy.

The latter point leads to the consideration that the experience of minority group status may lead the individual to view the world as more indeterminant. Kerckhoff (1971: 84-88) was able to show that a measure of fatalism did have a negative effect on the level of educational expectations for a sample of white high school children. These speculations might be formulated into a testable hypothesis. The racial difference in the explanatory power of the model should diminish if a measure of fatalism were statistically controlled. In a study of students in black colleges in the South, Gurin and Epps (1966) demonstrated that students whose career plans were directed toward occupations that were not traditional to blacks were also more likely to believe that their lives were more controlled by external factors. If black young people do, in fact, view the world as capricious, it would follow that they would be more likely to "hedge their bets" with regards to career plans.

A third possible reason for the lower explained variance of the educational expectations of black young people in the sample may be due to differential measurement error. It is possible that the instrumentation simply does not communicate as well to blacks. The results of the pilot tests conducted to evaluate the instrumentation make this seem unlikely but it is still possible. It is also possible that the operationalization of the variables may be less appropriate for black young people. Also, the issues to which the research is addressed may simply seem less relevant to black young people and this is reflected in their responses.

Which, if any, of the above considerations may serve to explain the observed differences cannot be convincingly identified. This is a question for future research. Answers to the question, however, not only have theoretical relevance but relevance for educational policy and development as well.

A more general theoretical issue to which this research may be addressed has been raised in a recent study by Porter (1974). Porter argues that blacks' mobility is sponsored while that of whites is competitive. The basis of his argument is the relatively greater effect of I.Q. as opposed to socioeconomic status on the educational attainment of blacks. Although I.Q. has a larger effect than socioeconomic status on educational achievement for whites, the difference is not as large (Porter, 1974: 309). Three major considerations of Porter's research and this effort must serve to temper any comparisons between the two. First, Porter's data includes a measure of attainment not available in this data set. Second, Porter's measure of significant other influence is subjective while the model under discussion uses an objective measure. Third, Porter does not treat educational and occupational expectations as intervening between antecedent variables and educational and occupational achievement.

With the above caveats in mind, the findings of the present research simply do not support Porter's contention. I.Q. is not as often a significant predictor of Blacks' significant others' expectations as it is of Whites'.[5] Further, I.Q. has a direct effect on career plans only for whites. Put another way, if a sponsorship system is operating for blacks, the data do not indicate that either the young people themselves or their significant others are aware of the fact.

In the discussion above, reference was made to a subjective measure of significant other influence. The validity of such a measure was directly challenged by Jencks (1972) in his work. Essentially, Jencks argued that to ask the child about such influence resulted in a measure of what the child desired rather than a measure of what significant others were really saying to the child. In the analysis conducted herein, the results challenge the use of a perceived measure of significant other influence as a proxy for the actual expectations of significant others. While the perceived measure may have utility in its own right, this research suggests that its use in lieu of actual significant other expectations leads to an underestimation of total effects (explained variance) on educational and occupational expectations and a misrepresentation of the network of effects on these two variables.

One tentative observation will be made with respect to the relative effect of significant other influence.[6] It appears that for blacks, parents equally influence means and ends (education and occupation) while nonparents influence only the means of career achievement. Among whites, parents influence the means for attainment while nonparents influence the end to be attained.

A final observation with reference to the equation for occupational expectations for whites is the significant negative effect of academic performance on occupational expectations. While it can be shown that the sign of the first order partial correlation between academic performance and occupational expectations controlling for I.Q. has a negative sign, the relationship is not significant.[7] The addition of the significant other influence variables pushes the negative relationship to significance but does not reduce the effect of I.Q. below significance. The authors are not aware of any similar findings in the literature nor does there appear to be a ready substantive explanation for such a relationship. At this point, such a finding can only be held in abeyance pending further research.

Implications for Development

The findings of this research do not point to specific development strategies. The research was developed to identify and document areas where specific strategies might be applied or developed, depending on the state of the art. Therefore, this discussion will center on those broad areas and refer to specific strategies only as illustrative.

Teachers and guidance counselors collectively constitute only a small percentage of the total significant others who are definers for either black or white young people. Furthermore, for both black and white youth, nonparent significant others significantly affect only educational or occupational career plans. These facts suggest that the school system has very little impact on the career plans of these young people. However, career guidance goes on with or without the skills and information available within the school system.

As a general approach it seems more reasonable to consider strategies which capitalize on channels of influence that exist rather than attempt to change those networks. This suggests that development considered should enhance the relationship between schools and those individuals who influence young people, particularly parents. For example, programs that allow parents to better evaluate students' progress might be investigated as alternatives to the traditional reporting system emphasizing teacher-parent interaction. Given the findings of this research, strategies which enhance the role of the school as catalyst and gatekeeper should be considered.

With reference to the catalyst role, strategies are envisioned that advance school-community relations and community involvement in the school. This appears to be a prerequisite to the school playing a gatekeeper role in the community. That is, if the school is to serve as a disseminator of career information, it must have a receptive audience. For this to occur, there must exist a sense of trust in what school personnel have to say and of involvement in what the school is trying to do. The Career Planning Support System of which this research is a strand has already developed one method for helping to achiave this end by including as an integral part of its Operation Guidance Package steering committees comprised of teachers, students, and community representatives. Another strategy to accomplish this end might be to employ Smith's (1972) organizational strategy which suggests a community organization having a proactive role in the school at both the policy and classroom levels. While the above strategies are broad in scope and represent rather large development investments, it is possible that simply opening school facilities for community use in the evenings might serve the same purpose.

It must be noted that even when school-community relations are optimal, only the necessary condition for a school having a role in enhancing career guidance through significant other influence has been established.[8] In a gatekeeper role, there are two primary functions which it seems could best be fulfilled by the school. The first is the identification of young people who do not have significant others. The second is the dissemination of information relevant to career planning to significant others.

Identification of young people who lack significant others can be accomplished by simply asking students what persons have influenced their educational and occupational plans. Strategies must be developed to "cultivate" significant others for such young people. Whether such a strategy would be best based on a "Big Brother" model or some other configuration is not clear at this time.

With reference to the dissemination function, it seems clear that schools have information concerning educational and occupational opportunities and the means of accessing those opportunities that are not common in the larger community. Strategies which assure that this information is adequately communicated must be considered. This could include utilization of local community communication media, routinized parent-child-counselor meetings, newsletters, etc. The key is the development of strategies which will work and which can be employed within the resource contraints of school systems.

A final consideration is the development of strategies which combine the catalyst-gatekeeper roles. That is, strategies which stimulate young people to seek career informaion. Regularly scheduled convocations in which individuals representing diverse occupations, ethnic groups, and sexes discuss their jobs in terms of their own experience therein can provide alternative role models for the students. Occupational exploration curricula might also contribute to fulfilling this function.

The effort of the Minority Youth Strand of the Career Planning Support System is ultimately addressed to the development of specific strategies efficacious and viable in their approach to utilizing significant other influence in career guidance. To accomplish this, a parallel study of females is currently being conducted. Following that effort, analysis of other data sets to validate findings will be initiated. If present findings are confirmed, then development work to identify feasible and cost-effective models will begin.

FOOTNOTES

[1] All models in this chapter involving significant other influence treat academic performance as intervening between the exogenous variables and significant other influence.

[2] The reader is reminded that interpretation of the results of this analysis must be made with caution in that many of the correlations are not ameneable to standard statistical test of significance.

[3] Two side issues must be addressed here. First the claim that nonparental significant others are setting levels of occupational expectations which imply that occupational achievement may be independent of educational achievement rests on the fact that their level of occupational expectations is not based on the same set of influences that educatinal significant others set levels of educational expectations. Specifically, socioeconomic origins tend to be ignored in setting levels of occupational expectations. Second, it might be argued that socioeconomic status affects nonparent occupational expectations indirectly through educational expectations held for the child. This implies a causal ordering which would be plausible only if it could be shown that a large majority of nonparent educational significant others were also occupational significant others or if a large majority of the nonparental occupational significant others were within the interaction network of parents or nonparental significant others. There is not evidence to support the existence of an interaction network at this time. On the other hand, a majority of nonparental occupational significant others are also educational significant others for both blacks and whites, but whether the overlap is large enough to argue for a causal relation is inconclusive.

[4] If such an argument is indeed valid, it should apply to any economically disadvantaged group.

[5] The effect of I.Q. on perceived significant other influences is also weaker for blacks in this research.

[6] Any findings based on a single sample must be considered tentative. However, these particular observations must be even more so due to the questionable specification of the equation for occupational expectations.

[7] The first order partial correlation between academic performance and occupational expectations is -.032, not significant at $\alpha = .05$.

[8] In a review of articles from 1971 through 1973 in three major guidance journals, Personnel and Guidance Journal, Vocational Guidance Quarterly and Journal of Vocational Behavior, eleven articles were identified which called for guidance techniques utilizing significant other influence in some way. However, none of the articles cited actual techniques which were developed or under development.

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APPENDIX A

A NOTE ON THE COMPARABILITY OF THE SAMPLE

A Note on the Comparability of the Sample

The comparability of the Columbus sample was tested by comparison of distributions of selected demographic characteristics with the 1970 census distributions of the same characteristics. The comparison variables are: parental educational attainment; labor force status by race, sex, and age of head of household; size of family; and family type by race. Comparisons were made between the Columbus sample and six designated census comparison regions, i.e., Urban United States, North Central Census Region, Urban Ohio, Franklin County (Ohio), Columbus S.M.S.A., and Columbus city proper. The comparison regions were chosen to match the general characteristics of the Columbus sample (i.e., they are urban samples and their racial composition is similar).[1] Census data was taken from the census summaries, General Social and Economic Characteristics, and Detailed Characteristics for the United States and Ohio. The census tables were compiled from a 20 percent sample of the population. The population figures presented in the report are ratio estimates based on the sample.

The census distributions of demographic characteristics were hypothesized to be approximately normal while the sample distributions were undetermined. The assumption of normality for the census distributions is reasonable considering the magnitude of observations and the ordinal level of measurement of the characteristics. Comparability of the Columbus sample to each census region was evaluated as extensively as available data permitted. Demonstration of comparability rests with the statistical inference of no difference between the sample distributions and the census distributions. Only gross comparisons are possible due to the relatively small sample size (N=247), but the comparisons conducted are sufficiently specific to discriminate discrepancies (between the sample's and census' distributions of characteristics) of sufficient magnitude to imply bias in the sample.

Educational Attainment

This section assesses the educational attainment of parents in the sample relative to the educational attainment of adults in each of the Census comparison regions. In order to achieve comparability between the Columbus sample and Census data, two adjustments in the data were made. The first was to aggregate all parents in the Columbus sample, reporting training in vocational-technical programs with those receiving a high school diploma. (See: Appendix D, p. d13, for instrumentation of parents education.) This step was taken due to the fact that vocational-technical training is not reported by the Census as part of "regular" schooling (see: U.S. Bureau of the Census, 1970: Appendix B, pp. App. 8 - App. 10). The data for the sample as well as the Census comparison regions were then aggregated to yield comparisons between the proportion of individuals completing twelve or fewer years of education. Although this procedure looses information, differences between the educational achievement categories in the sample and the Census made this comparison more appropriate than a more informative distributional analysis. Consequently, potential bias in this variable is assessed on the basis of differences in point estimates, not distributional estimates.

Prior to reporting the results of the comparisons, a brief note on the statistical procedure is necessary. The Z-test of differences between percentages are computed by the following formula:

$$Z = \frac{P_1 - P_2}{\sqrt{\frac{P_1Q_1}{N_1} + \frac{P_2Q_2}{N_2}}}$$

where P_1 is the percentage reporting the given level of education in the respective comparison region and P_2 is the percentage reporting the same level for the Columbus sample. Also, $Q_1 = 1-P_1$ and $Q_2 = 1-P_2$ and N_1 and N_2 are respective sample sizes. The two-sample test is used since the census data is based on a 20 percent sample of the universe. A finite population correction factor is applied to obtain the sample values for the census figures. The census values reported (N_1) are projected universe values. To get the approximate sample N's, the Census projections were divided by a constant (5) which includes the finite population correction. Thus, the above formula becomes:

$$Z = \frac{P_1 - P_2}{\sqrt{\frac{5P_1Q_1}{N_1}\left(\frac{N_1-n}{N_1-1}\right) + \frac{P_2Q_2}{N_2}}}$$

where N_1 = projected size of the total population, and n = the size of the sample gathered by the Census. The factor of 5 corrects for the fact that the Census reports projected the total-population size (N_1). The finite population multiplier is given by the term $(N_1-n)/(N_1-1)$. Since $n = 1/5\ N_1$,

$$Z = \frac{P_1 - P_2}{\sqrt{\frac{5P_1Q_1}{N_1}\left(\frac{N_1 - 1/5N_1}{N_1-1}\right) + \frac{P_2Q_2}{N_2}}} = \frac{P_1 - P_2}{\sqrt{\frac{4P_1Q_1}{N_1-1} + \frac{P_2Q_2}{N_2}}}$$

To reject a null hypothesis by a non-directional test at the .05 level, the reported Z value would have to lie outside the interval $-1.96 < Z > 1.96$.

Table 1 presents the proportion of individuals obtaining high school level or less education and the base^{SPN} on which the proportion is computed by race and sex for the sample of parents and the Census comparison regions. Additionally, it should be noted that the Census data includes adults twenty-five years old and older, whereas the Columbus sample includes adults with at least one child in the tenth grade. Comparison of proportions in the Columbus sample against those in each of the Census comparison regions yields only one statistically significant difference which might be due to sampling error. However, inspection of the table suggests that the difference obtained between White males in the sample and in the North Central Region is due to differences between the Columbus Metropolitan Area and that region. The fact that the differences of proportions between the Columbus Metropolitan Area and the North Central Region is greater than that between the sample and the Columbus Metropolitan Area actually reinforces the notion that the sample is not "loaded" by appreciable sampling bias on this characteristic.

Male Employment Status

In Table 2(a), employment status is compared between the sample and census comparison regions for males sixteen years of age and older. Labor force participation is examined by comparing percent employed. The number reporting retirement and/or disability in the sample was insufficient to have confidence in a comparison (five blacks, two whites) and, hence, they were excluded from both census and sample data. Percentage employment of potential labor force serves as the basis for the comparison. A gross control on age is provided in that the census summaries are for males sixteen years of age or older. The black sample size is somewhat smaller than the white sample size since the black family units in the sample reported female head (husband missing) more frequently than whites. (White males, N=108 potential labor force; black males, N=77 potential labor force.) Again the North Central Census data is a combined rural-urban figure. Table 2(b) summarizes the tests of the null hypothesis using the same procedures as in the educational comparisons. Again, the null hypotheses could not be rejected at the .05 level using a non-directional test. On the basis of male labor force participation, the Columbus sample is not significantly different from the census distributions. The cautionary note stated earlier with respect to sample size also applies here, but it is reasonable to say no gross discrepancies occur between the sample and census.

Female Labor Force Participation

Female labor force characteristics for the Columbus sample and comparison regions appear in Table 3(a). The North Central data appearing in black-white total are not directly comparable to the sample data because of the over-representation of blacks in the sample. The control for age is built into the comparison in that only women with children six to seventeen years of age are used in the census comparison category. The comparison between sample and census deals with actual labor force status of females with children six-seventeen years old. Each observation in the Columbus sample fits within the definition of the boundaries of the comparison because of the initial sample selection procedure. Table 3(b) presents the tests of the null hypothesis using the procedure described in analyzing education and male labor force participation. The results are consistent with the first two comparisons in that the null hypothesis could not be rejected by a non-directional test at $\alpha = .05$. On the basis of female labor force participation, no gross discrepancy between the sample and comparison regions emerges.

Family Type

Table 4(a) summarizes census comparison regions and the Columbus sample's distributions of families by race and type of family. The base for the comparison is proportion intact families by race. Intact is defined as a unit with both husband and wife present. Proportion intact is computed by dividing the number of husband-wife families (intact) by the total number of families. Data were not available by race for Franklin County and Columbus city proper. Table 4(b) summarizes the differences between the census and sample. As with previous comparisons, H_o could not be rejected in any of the present comparisons with non-directional test at the .05 level. Comparison by family type by race supports previous statements of comparability of the sample. Since the Columbus and Franklin

County data were not available from the census printed materials, reservations about the possible outcome of comparisons have to be stated and examined. It is not suspected, however, that the results of such comparisons would vary significantly from the reported results. The rationale for the "no difference" assumption follows from the observed comparability across the given demographic characteristics of the census data for urban Ohio and the more localized comparison regions. The sample proportions are constant for all comparisons while the census proportions vary only slightly in both the previous comparisons and the present case (for blacks: .6626, urban U.S.; .6528, North Central; and .6721, Ohio. For whites: .8958, urban U.S.; .9101, North Central; and .9068, Ohio). No differences at the more localized census comparisons are apt to occur.

Age Distributions

Age comparisons are reported in Tables 5(a) - (c). To be consistent with the sample selection procedures of the Columbus sample, the age distributions were compared to a controlled census age distribution. The truncated distributions report age of head of household by family type, with at least one child, aged thirteen to nineteen, by race. The base was created in this fashion to control for the fact that the Columbus sample could not be used to generate a true population age distribution for the parents because of the limiting conditions in our sample (i.e., being married and having children of high school age). The higher expectations would result in age distributions significantly different from the total population. Further specification of the distribution is accomplished by categorizing by family type. This further specification resulted in a distribution for white, female-headed families with a small sample size (N = 16). With only sixteen observations across four categories, a generated empirical distribution is highly suspect especially when one cell shows no observations.

The distributions are compared rather than individual categorical proportions because of the relative compatability of each category. A more sensitive test is used to test the null hypothesis where relative categorical comparability between distributions is evident. The Kolmogorov-Smirnov two sample test yields the significance of difference between distributions.[2] The non-directional test is sensitive to any distributional differences while the directional test is sensitive to differences, in central tendency. In order to be as specific as possible concerning differences between the Columbus Sample and the Census Projections both the directional and non-directional tests will be employed.

The directional hypothesis employs the statistic:

$$X^2 = 4\,D^2 \frac{N_1 N_2}{N_1 + N_2}$$

where D is the maximum directional difference between the categorical cumulative percentages, N_1 and N_2 are sample sizes and the value of X^2 is read with degrees of freedom = 2. The non-directional hypothesis is tested employing:

$$D_{critical} = 1.36 \sqrt{\frac{N_1 + N_2}{N_1 N_2}}$$

where N_1 and N_2 are sample sizes and $D_{critical}$ is the value that the maximum absolute D value must exceed to reject H_o at the .05 level. To correct for the inflated census N's due to the ratio projections from the 20 percent sample, the following corrections in the two above formulas are made:

$$X^2 = 4D^2 \frac{N_1 N_2}{N_1 + N_2}$$

Becomes,

$$X^2 = 4D^2 \frac{N_1 N_2 \quad /5}{N_1/5 + N_2}$$

$$X^2 = 4D^2 \frac{N_1 N_2/5}{(N_1 + 5N_2)/5}$$

$$X^2 = 4D^2 \frac{N_1N_2}{N_1+5N_2}$$

the Columbus sample N in the denominator is multiplied by a factor of 5 for the directional test. For the nondirectional test

$$D_{\text{critical}} = 1.36 \sqrt{\frac{N_1 + N_2}{N_1N_2}}$$

$$D_{\text{critical}} = 1.36 \sqrt{\frac{N_1/5+N_2}{N_1N_2/5}}$$

$$D_{\text{critical}} = 1.36 \sqrt{\frac{N_1+5N_2}{N_1N_2}}$$

Both directional and nondirectional results are reported in Table 5(d). The nondirectional values are the ones that are most relevant to showing no difference.

Again, data for the comparison regions is incomplete and the total range of comparisons infeasible. The census data is not directly comparable in that there is no direct way to control for the age of children using the census summary tables. The census controls assure that each family unit has at least one child but not necessarily of high school age. Consequently, the comparison of the age distributions has to be interpreted with reservations. The point of non-comparability with respect to the age characteristic is illustrated by the family size comparisons (Table 6(a) - (c)) where the mean sample family size is larger than the census mean size.

With the above restrictions, the results in Table (d) are suspect but support the credibility of the sample with the exception of white, female-headed, family units' age distribution. The rejection of H_o for the exception is explained by the small sample size involved in the specified comparison and in that the statistical test used is a large sample (N = 40+) test of significance. The results of the age distribution comparisons are mixed but the deviations are explainable in the light of the given restrictions. The present comparisons yields only weak support to the overall comparability of the sample.

Family Size

The findings of the family size comparisons for the Columbus sample and the census are reported here (Table 6(a) - (c)) to illustrate the sensitivity of the statistical tests employed to show differences between distributions. It is known that the family size comparison is biased in the sense that the Columbus sample would tend to have larger family units than the census distributions because each sample unit has a child of high school age. The necessary controls for the comparison were impossible to establish employing the census summary tables. The non-comparability of the sample distribution of family size was expected. Table 6(c) summarizes the results of family size comparisons. The data was incomplete, as was the case for the age distribution data, and the test of significance used was also the same as the age-distribution test. In every case, the null hypothesis was rejected as expected. The significance of differences between percentages tests was not used since the less powerful distributions tests sufficiently illustrate the differences. Family size comparisons yield no evidence to support the representativeness of the Columbus sample but it does illustrate the ability to pick out gross differences by the tests employed.

Summary

The results of the comparisons are consistent enough to illustrate the credibility of the sample. No gross deviations were reported that could not be controlled and accounted for. This is not a hard statement of generalizability of the findings of the analysis to larger population. But, evidence is given to show that the sample is not grossly biased for either blacks or whites. Alternate modes of comparison were considered and rejected because the measurement level of the variables involved demanded basically a non-parametric approach. Means and variances of key variables (notably educational attainment) could not be computed because of response category inconsistencies between the sample and census data. Parametric techniques were avoided to side step the above problem. The data was not available for use to make a strict statement of comparability nor was the sample chosen to be nationally or even regionally representative. The evidence is sufficient, however, to assure that the substantive research findings based on the sample data do not reflect systematic bias due to an inadequate sample.

FOOTNOTES

[1] For full explanation of sample selection see the methodological section of the text.

[2] For more extensive treatment than given here, see Seigel, *Non Parametric Statistics*, McGraw Hill, Inc., 1956, p. 127-136.

Table 1: Proportion of Persons Completing Twelve or Fewer Years of Schooling Among Parents in the Columbus Sample and Adults Twenty-Five Years Old and Older in Selected Census Comparison Regions Controlling for Race and Sex*

Race	Sex	Columbus Sample	Columbus Metropolitan	Columbus SMSA	Franklin County	Ohio Urban	North-Central Region	U.S. Urban
Black	Female	.864 n=110	.882 n=25,532	.876 n=27,052	.876 n=26,641	.903 n=243,863	.888 n=1,133,796	.871 n=5,225,956
	Male	.840 n=81	.876 n=21,877	.870 n=23,381	.869 n=22,951	.897 n=205,963	.887 n=972,273	.872 n=4,336,951
White	Female	.823 n=124	.807 n=120,589	.775 n=220,547	.770 n=198,873	.828 n=2,057,588	.820 n=14,703,612	.789 n=38,108,638
	Male	.667 n=108	.719 n=104,260	.688 n=195,495	.676 n=174,914	.752 n=1,794,213	.789@ n=13,335,046	.707 n=33,362,905

*The upper figure in each cell indicates the proportion of individuals completing twelve or fewer years of education. The lower figure in each cell indicates the base n on which the proportion was computed. It should also be noted that the data is not available by rural-urban residence for the North Central Region.

@ $P(P_1=P_2) \leq \alpha = .05$

Table 2(a) Civilian Employment Status for Males of 16+ Years of Age for Census Comparison Regions and Columbus Sample by Race

	Black				White			
	Census		Sample		Census		Sample	
	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed
Census Comparison Region Urban U.S.	3,358,942 (.935)	233,435 (.065)	67 (.8701)	10 (.1299)	31,365,131 (.964)	1,171,184 (.036)	105 (.9722)	3 278)
North Central Census Region	848,370 (.922)	71,747 (.078)	67 (.8701)	10 (.1299)	12,749,681 (.966)	458,818 (.034)	105 (.9722)	3 (.0278)
Urban Ohio	180,947 (.925)	14,567 (.075)	67 (.8701)	10 (.1299)	1,769,573 (.969)	56,807 (.031)	105 (.9722)	3 (.0278)
Franklin County	19,874 (.942)	1,213 (.058)	67 (.8701)	10 (.1299)	179,218 (.970)	5,517 (.030)	105 (.9722)	3 (.0278)
Columbus SMSA	20,186 (.943)	1,217 (.057)	67 (.8701)	10 (.1299)	198,332 (.970)	6,081 (.030)	105 (.9722)	3 (.0278)
Columbus Proper	19,020 (.941)	1,194 (.059)	67 (.8701)	10 (.1299)	107,032 (.965)	3,900 (.035)	105 (.9722)	3 (.0278)

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Table 2(b) Significance of Difference Between Percentages for the Employed Civilian Labor Force for Census Comparison Region and Columbus Sample by Race

	Black	White
Urban U.S.	+1.696	-.518
North Central	+1.357	-.392
Census Comparison Region Urban Ohio	+1.434	-.203
Franklin County	+1.872	-.139
Columbus SMSA	+1.901	-.139
Columbus Proper	+1.846	-.454

Table 3(a) Labor Force Status of Females With Children 6-17 for Census Comparison Regions and Columbus Sample by Race

	Black				White			
	Census		Sample		Census		Sample	
Census Comparison Region	Total With Children	Working With Children	Total With Children	Working With Children	Total With Children	Working With Children	Total With Children	Worki With Child ren
Urban U.S.	747,558	446,358 (.537)	111	64 (.5766)	8,165,426	3,794,075 (.465)	122	58 (.475
North Central*	3,562,961	1,667,232 (.468)	233	122 (.5236)				
Urban Ohio	42,610	25,573 (.595)	111	64 (.5766)	454,386	196,810 (.433)	122	58 (.475
Franklin County	4,459	2,797 (.627)	111	64 (.5766)	44,985	21,217 (.4717)	122	58 (.475
Columbus SMSA	4,552	2,870 (.630)	111	64 (.5766)	50,399	23,891 (.474)	122	58 (.475
Columbus Proper	4,154	2,596 (.6258)	111	64 (.5766)	23,017	11,066 (.4808)	122	58 (.475

*Data for North Central is Black plus White total, hence, not directly comparable since Columbus Sample is not a proportionate sample of Blacks.

Table 3(b) Significance of Difference Between Percentages for Census Comparison Region and Columbus Sample for Labor Force Status of Females with Children 6-17 Years of Age by Race

	Black	White
Census Comparison Region		
Urban U.S.	-.844	-.115
North Central*[2]	-1.699	
Urban Ohio	+.390	-.937
Franklin County	+1.027	-.081
Columbus SMSA	+1.029	-.031
Columbus Proper	+1.023	+.118

*[2] North Central value is Black-White Total and not interpretable since Columbus sample is over-represented with respect to Blacks.

Table 4(a) Proportion Intact and Female-headed Families with Children 13-19 Years of Age for Census Comparison Regions and Columbus Sample by Race

	Black				White			
	Census		Sample		Census		Sample	
	Husband-Wife	Female-Head	Husband-Wife	Female-Head	Husband-Wife	Female-Head	Husband-Wife	Female Head
Urban U.S.	977,919 (.6626)	497,869 (.3374)	77 (.7130)	31 (.2870)	11,218,341 (.8958)	1,304,384 (.1012)	110 (.8730)	16 (.1270
North Central	199,502 (.6528)	106,121 (.3472)	77 (.7130)	31 (.2870)	3,329,248 (.9101)	328,702 (.0899)	110 (.8730)	16 (.1270
Ohio	44,874 (.6721)	21,888 (.3279)	77 (.7130)	31 (.2870)	637,053 (.9068)	65,468 (.0932)	110 (.8730)	16 (.1270
Columbus SMSA*	490,963 (.87)	74,212 (.13)	187 (.799)	47 (.201)				

*Black/White breakdown is not available, hence, sample and Census are not directly comparable without weighting for the Black over-representation.

Table 4(b) Significance of Difference Between Proportions for Census Comparison Regions and Columbus Sample for Intact Families with Children 6-17 Years of Age by Race

Census Comparison Region	Black	White
Urban U.S.	-1.158	+.243
North Central	-1.383	+1.251
Ohio	-.937	+1.139
Columbus SMSA	+1.631	

Table 5(a) Age of Head of Family with Children 13 to 19 Years of Age by Family Type for Urban United States and Columbus Sample by Race*

	Black				White			
	Census		Sample		Census		Sample	
Age of Head	Intact	Female Head	Intact	Female Head	Intact	Female Head	Intact	Female Head
Below 35	91,046 (.0931)	100,518 (.2019)	7 (.0875)	6 (.1935)	478,144 (.0426)	125,809 (.0966)	2 (.018)	6 (.3750)
35 - 44	392,007 (.4930)	231,026 (.6659)	44 (.6375)	19 (.8064)	4,685,277 (.4602)	551,541 (.5200)	48 (.4504)	8 (.8750)
45 - 64	459,291 (.9637)	160,195 (.9877)	28 (.9875)	6 (1.000)	5,898,183 (.9860)	614,357 (.9916)	60 (.9909)	2 (1.000)
65 +	35,575 (1.001)	6,130 (1.000)	1 (1.000)	0 (1.000)	156,737 (1.000)	11,019 (1.001)	1 (1.000)	0 (1.000)
TOTALS	977,919	497,869	80	31	11,218,341	1,302,726	111	16

*Proportions are cumulative across age distributions.

Table 5(b) Age of Head of Family with Children 13 to 19 Years of Age by Family Type for the North Central Census Region and Columbus Sample by Race*

	Black				White			
	Census		Sample		Census		Sample	
Age of Head	Intact	Female Head	Intact	Female Head	Intact	Female Head	Intact	Female Head
Below 35	19,234 (.0964)	23,363 (.2202)	7 (.0875)	6 (.1935)	133,439 (.0401)	29,835 (.0908)	2 (.018)	6 (.3750)
36 - 44	85,788 (.5264)	52,214 (.7122)	44 (.6375)	19 (.8064)	1,399,403 (.4604)	133,565 (.4968)	48 (.4504)	8 (.8750)
45 - 64	88,870 (.9719)	29,715 (.9922)	28 (.9875)	6 (1.000)	1,753,384 (.9871)	162,078 (.9899)	60 (.9909)	2 (1.000)
65+	5,610 (.1000)	829 (1.000)	1 (1.000)	0 (1.000)	43,112 (1.000)	3,224 (1.000)	1 (.9999)	0 (1.000)
TOTALS	199,502	106,121	80	31	3,329,248	328,702	111	16

*Proportions reported are cumulative proportions across age distributions.

Table 5(c) Age of Head of Family With Children 13-19 Years of Age by Family Type for Ohio and Columbus Sample by Race*

	Black				White			
	Census		Sample		Census		Sample	
Age of Head	Intact	Female Head	Intact	Female Head	Intact	Female Head	Intact	Female Head
Below 35	3,834	4,567	7	6	26,438	6,235	2	6
	(.0854)	(.2087)	(.0875)	(.1935)	(.0415)	(.0952)	(.018)	(.375)
35-44	19,038	11,133	44	19	273,620	26,672	48	8
	(.5097)	(.7173)	(.6375)	(.8064)	(.4710)	(.5026)	(.4504)	(.875)
45-64	20,769	60,491	28	6	329,664	31,968	60	2
	(.9725)	(.9937)	(.9875)	(.9999)	(.9885)	(.9909)	(.9909)	(1.000)
65+	1,233	139	1	0	7,331	593	1	0
	(1.000)	(1.0001)	(1.000)	(.9999)	(1.000)	(1.000)	(.9999)	(1.000)
TOTALS	44,874	21,888	80	31	637,053	65,468	111	16

*Proportions reported are cumulative proportions across age distributions.

Table 5 (d): Significance of Difference Between Proportion Distributions for Census Comparison Regions, and Columbus Sample for Age Distributions of Head of Family with Children 13-19 Years of Age by Family Type and by Race*

	Black				White			
	Husband-Wife		Female Head		Husband-Wife		Female Head	
Census Comparison Region	Directional a	Non-Directional b	Directional a	Non-Directional b	Directional a	Non-Directional b	Directional a	Non-Directional b
Urban U.S.	6.679@	(-.1445) (.1521)	2.447	(-.1405) (.244)	.269	(.0246) (.129)	8.065	(.355) (.340)
North Central	3.930	(-.1111) (.1375)	1.099	(-.0942) (.244)	.220	(.0221) (.129)	9.15	(-.378) (.340)
Ohio	5.180	(-.1278) (.1527)	2.011	(-.1278) (.245)	.245	(.0235) (.129)	8.8	(.372) (.340)

@ indicates statistic value large enough to reject H_0 at .05 level.

* - The Kolmogorov-Simirnov two sample test is used to compute differences between distributions.

Table 6(a) Size of Family With at Least One Child for Urban U.S. and Columbus Sample by Race*

	Black		White	
	Census	Sample	Census	Sample
Size of Family				
3	919,820(.2744)	6(.0508)	9,248,462(.3242)	1(.0076)
4	762,191(.5018)	10(.1355)	8,640,220(.6271)	24(.1894)
5	555,166(.6674)	19(.2965)	5,424,593(.8173)	38(.4773)
6	407,342(.7889)	28(.5338)	2,873,526(.9180)	30(.7046)
7+	707,739(1.000)	55(.9999)	2,338,165(1.000)	39(1.0001)
Totals	3,352,258	118	28,524,966	132

*Proportions reported are cumulative percentages

Table 6(b) Size of Family With at Least One Child for Ohio and Columbus Sample by Race*

	Black		White	
	Census	Sample	Census	Sample
3	46,964 (.2843)	6 (.0508)	552,379 (.3278)	1 (.0076)
4	39,689 (.5246)	10 (.1355)	493,803 (.6208)	24 (.1894)
5	28,714 (.6984)	19 (.2965)	318,541 (.8098)	38 (.4773)
6	19,949 (.8192)	28 (.5338)	175,016 (.9137)	30 (.7046)
7+	29,875 (1.0001)	55 (.9999)	145,468 (1.000)	39 (1.0001)
Totals	165,191	118	1,685,207	132

*Proportions reported are cumulative percentages

Table 6(c) Significance of Difference Between Percentage Distributions for Census Comparison Regions and Columbus Sample for Size of Family with At Least One Child by Race*

	Black			White		
	Directional a	Non-Directional b		Directional a	Non-Directional b	
Census Comparison Regions						
Urban U.S.	59.306@	.3709	(.1285)@	101.152@	.4377	(.0976)@
Ohio	75.957@	.4019	(.1254)@	98.222@	.4314	(.1186)@

@indicates a value significant enough to reject H_0 at the .05 level.

*The Kolmogoro-Smirno two sample test is used to compute differences between distributions.

APPENDIX B

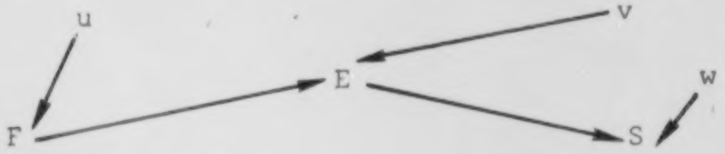
EXPLICATION OF PATH ANALYSIS

Explication of Path Analysis

The purpose of this appendix is to provide a readable description of the method of path analysis and the assumptions underlying its use. The appendix is subdivided into three sections: a comparison of path analysis and tabular analysis, a restatement of the assumptions of path analysis, and a discussion of how well the assumptions are met by the data available for this report, and justification of the use of path analysis.

Comparison of Path Analysis to Tabular Analysis

Consider three variables which are of central importance to the study of status mobility in the United States: (1) father's occupational status, (2) son's educational achievement, and (3) son's occupational status. Let us denote father's status by the letter F, son's education by E, and son's status by S. Then the basic model may be depicted by a path diagram:



The diagram indicates that our *a priori* model of the system presumes that father's occupational status (F) influences both son's education (E) and his occupational status (S), and that son's educational level also influences the status level of his occupational status (S).[1] The variables u, v, and w are called unique variables or "disturbances" or sometimes, "residuals," and are included in order to make explicit the fact that we do not believe that son's educational level is solely determined by his "origin" status level, and that "destination" status is determined by factors other than education and status origins. The unique variable associated with father's status makes explicit the assumption that this variable (F) is completely determined by factors outside the system.

It may be useful to consider the substantive ramifications of omitting some of the arrows from the model. Suppose that the arrow running from E to S is omitted. The omission implies that education has no bearing on the status of the occupation one achieves;

rather, status of origin determines both educational level and status of destination. The correlation between education and occupational status is solely due to the fact that both variables are influenced by a prior common "cause," father's occupational status. Such a model describes what has been termed a "sponsored" system of mobility (Turner, 1960). On the other hand, the arrow from F to S may be omitted. In this case, origin status has no *direct* bearing on destination status, but education does directly influence destination status and is, in turn, directly affected by origin status. Consequently, origin status *indirectly* affects destination status via the intervening link, education. This mobility system is closer to being "open" than one in which both education and occupational level are determined by father's status level. Finally, both arrows leading from origin status may be missing. In this model, education determines occupational status attainment level, but father's occupational attainment has no influence on either education or occupation of the son. This model describes what has been called a "contest" mobility system (Turner, 1960).

Given that one has a representative sample of sons with a record of occupational status, educational level, and status of father's occupation for each son, how can the three theoretical possibilities just described be distinguished? In the case of the missing arrow leading from education (E) to son's status (S), one ought to observe no relationship between education and son's status *among sons whose fathers have the same status occupations*. This is not to say that education and son's status will be unrelated. It is only when father's status is "controlled" or "constant" that the relationship is zero. For example, suppose that all three of the variables in the system are split into two levels, high and low, and that the high level of each variable is designated by an H subscript and the low level by an L subscript (e.g., high educational level, say college attendance = E_H, and low educational level, say did not attend college = E_L). Then, the theoretical situation in which education has no effect on status attainment should exhibit relationships given in the hypothetical data below.

	E_H	E_L
S_H	62%	38%
S_L	30	62
Totals	100	100

	F_H		F_L	
	E_H	E_L	E_H	E_L
S_H	75%	75%	30%	30%
S_L	25	25	70	70
Totals	100	100	100	100

In the first table, education is related to son's status as can be seen by noting that a higher percentage of sons with college attendance (E_H) achieve high status (S_H) than did the sons with no college attendance (E_L) (62 - 38 = 24). When the association between education and son's status is examined separately for sons whose fathers had high status occupations (F_H) and for sons whose fathers had low status occupations (F_L) one sees that the association has disappeared. The second table illustrates such a phenomenon. Within origin status levels, the percentage attaining high occupational level is the same irrespective of education (75 - 75 = 30 - 30 = 0). On the other hand, comparing column one to column three and column two to column four in the second table shows a strong relationship between status origin and status destination when educational level is constant (75 - 30 = 45). This idealized case illustrates a "closed" or "sponsored" system of mobility. Education is irrelevant to occupational achievement once status origin is "controlled."

When the direct path (arrow) from father's status to son's status is omitted from the path diagram, a different patterning of the data is implied. The omission implies that status origins affect status destination only as origins impact on the educational level achieved by the son. To insure a high level of occupational achievement for his son, a father must see to it that the son achieves a high level of education. Since this hypothesis allows for an indirect effect between origin and destination status, the data must show a relationship between the status of father's occupation and status of son's occupation. When this relationship is examined separately for the two educational levels, however, no association should remain. The following hypothetical data illustrates this.

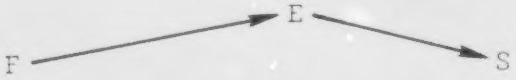
	F_H	F_L
S_H	60%	36%
S_L	40	64
Totals	100	100

	E_H		E_L	
	F_H	F_L	F_H	F_L
S_H	80%	80%	30%	30%
S_L	20	20	70	70
Totals	100	100	100	100

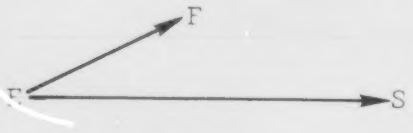
The first table shows that father's and son's status are related when education is not considered (60 - 36 = 24), but this association vanishes when observed separately for sons with college education (E_H) and sons without college (E_L) (80 - 80 = 30 - 30 = 0). These data represent a partially "open" mobility system. Fathers may still influence their son's occupational achievement in insofar as they can determine the sons' education (e.g., by providing financing, verbal urgings, etc.). In a compeletely "open" mobility system, origin status would be unrelated to destination status for whatever reason; hence, the two variable cross-tabulation between father's and son's status would show no association.[2]

It is important to raise the question: based on the data just presented, how can one distinguish the following two possibilities? The answer is that one cannot determine whether model A or model B is true using information in the data just presented. It must be

Model A:



Model B:



determined independently of the relationships in the data that model A is the correct alternative. The data are equally consistent with either interpretation. For the present hypothetical system this determination is not difficult to make. The level of education achieved by the sons cannot affect the father's status while the son was growing up. This argument can be made without collecting any data.

The idealized possibilities just reviewed seldom describe actual societies. Normally, one will observe a "compromise" between the perfectly "open" and the completely "closed" mobility systems. Posing the perfect cases, however, gives a useful standard of comparison. Let us examine some alternative data which depict none of the ideal types. Consider the following three-level cross-tabulation (cell entries are frequencies):

	E_H		E_L	
	F_H	F_L	F_H	F_L
S_H	42	20	30	27
S_L	18	20	30	63

Analyzing the data first by tabular methods, then with a simple path model will provide useful comparisons. Some of the assumptions in the path modeling may become clear. First, observe the relationships between the two independent variables, education (E) and father's occupational status (F) with the dependent variable, son's occupation status:

	F_H	F_L
S_H	60%	36%
S_L	40	64
Totals	100	100
	(120)	(130)

	F_H	F_L
S_H	62%	38%
S_L	38	62
Totals	100	100
	(100)	(150)

Both education and father's status are related to son's status to a moderate degree. In fact, taking the percentage difference in the top row of each table as an index of the magnitude of association, one finds that the two independent variables are related with status of son to the same degree (60 - 36 = 62 - 38 = 24). When the three-variable table is converted to percentages (with column totals as the bases), the following relationships turn up.

	E_H		E_L	
	F_H	F_L	F_H	F_L
S_H	70%	50%	50%	30%
S_L	30	50	50	70
Totals	100	100	100	100
	(60)	(40)	(60)	(90)

Comparing percentages between the first two columns and, again, between the last two columns shows that the association between father's and son's status is slightly reduced within levels of education, but remains near the level observed when education was not "controlled." Again, taking the percentage difference in the top row as an index of association, we find 70 - 50 = 50 - 30 = 20. This value is close to the value of 24 observed when education was not considered. The same level of association shows up when the relationship between education and son's status is "partialed" for father's status: compare column one to column three and column two to column four (70 - 50 = 50 - 30 = 20, as before).[3] These data suggest that all three paths (arrows) in the original path diagram must be kept in place. Both education and origin status influence son's occupational level directly, and origin status also influences education, and thereby indirectly as well as directly influences son's status.

The same mobility system that has been analyzed with tables can be represented by a three-variable path model. The "structural equations" for the model may be written in the following terms:

$$(1)\qquad F = a_F + P_{FU}U$$

$$E = a_E + P_{EF}F + P_{EV}V$$

$$S = a_S + P_{SF}F + P_{SE}E + P_{SW}W$$

Recall that F stands for father's status, E for education, S for son's status, U, V, and W for unique unobserved factors which influence F, E, and S respectively.[4] The a's are additive constants, and the P's are multiplier constants or path coefficients (unstandardized) which index the magnitude of effects between variables. The first subscript attached to each path identifies the dependent variable and the second identifies the independent variable. For example, P_{SF} gives the direct effect of father's status on son's status. (It may help to picture $P_{S \leftarrow F}$, the arrow points "backwards.") The algebraic derivation of path coefficients can be found in several different sources (e.g., Duncan, 1966 and Land, 1969). From Land, the following equations are derived (Land, 1969):

$$b_{EF} = P_{EF} + P_{EV}b_{VF}$$

$$b_{SF} = P_{SF} + P_{SE}b_{EF} + P_{SW}b_{WF}$$

where b_{yx} is a sample bivariate "slope" coefficient defined by the ratio of the covariance between x and y to the variance of x.[5] The same argument applied to the relationship between education and son's status lead to a third equation:

$$b_{SE} = P_{SF}b_{FE} + P_{SE} + P_{SW}b_{WE}$$

Taken together, we have three estimating equations:

$$b_{EF} = P_{EF} + P_{EV}b_{VF} \tag{2}$$

$$b_{SF} = P_{SF} + P_{SE}b_{EF} + P_{SW}b_{WF}$$

$$b_{SE} = P_{SF}b_{FE} + P_{SE} + P_{SW}b_{WE}$$

The equations in (2) contain eight unknown quantities, all three paths (P_{EF}, P_{SE}, P_{SF}), the three slopes between the unique variables and the independent variables (b_{VF}, b_{WF}, b_{WE}), and the two paths associated with the unique variables (P_{EV}, P_{SW}). Since there are only three equations but eight unknowns, certain simplifying assumptions must be made. The standard assumption in "recursive" path analysis is to set all three slopes between unique variables and independent variables to zero ($b_{VF} = b_{WF} = b_{WE} = 0$). Such a class of assumptions may appear arbitrary, and it is, in fact, arbitrary. It is similar, however, to the "common sense" notion that all "relevant" variables must be included in an analysis before one can be sure of the results. The "common sense" assumption and the assumptions of path analysis serve the same end; each allows some estimate of effects between observed variables by eliminating unknowns from the equations. For example, assuming that all variables which affect son's status are measured, is the same as setting $P_{SW} = 0$. When both P_{SW} and P_{EV} are zero, the slopes connecting observed independent variables with the unique variables (b_{EF}, b_{SF}, b_{SE}) are multiplied by zero in equations (2); hence, the terms with zero multipliers are eliminated in equations (2). The same result is achieved by assuming explicitly that $b_{EF} = b_{SF} = b_{SE} = 0$, as is done in path analysis. This comparison makes it clear that the assumption of path analysis is a little less stringent than the "common sense" assumption. It is not required that all "relevant" variables be included in the analysis, but it is required that the composite of those which are omitted (U, V, W) is uncorrelated with those that are included.^{6}

When the terms containing the slopes connecting observed independent variables with unique factors are left out of the equation system (2) as per assumption, the following three equations occur:

$$
\begin{aligned}
(3) \qquad b_{EF} &= P_{EF} \\
b_{SF} &= P_{SF} + P_{SE} b_{EF} \\
b_{SE} &= P_{SE}\, b_{FE} + P_{SE}
\end{aligned}
$$

The first equation in (3) identifies P_{EF} as the bivariate slope or regression coefficient between father's status and son's education, with the latter as dependent variable. The second two equations in (3) can easily be solved simultaneously for P_{SF} and P_{SE}:

$$(4) \qquad P_{SF} = \frac{b_{SF} - b_{SE} b_{EF}}{1 - b_{EF} b_{FE}} = b_{SF \cdot E}$$

$$(5) \qquad P_{SE} = \frac{b_{SE} - b_{SF} b_{FE}}{1 - b_{EF} b_{FE}} = b_{SE \cdot F}$$

The symbol $b_{SF \cdot E}$ stands for the partial regression coefficient or "slope" between son's status (dependent variable) and father's status (independent variable) with education "constant." Similarly, $b_{SE \cdot F}$ indicates the partial regression coefficient between son's status (dependent variable) and education (independent variable) with father's status "controlled." Thus, under the stated assumptions, path coefficients are identical to regression coefficients (see Boudon, 1965). Path coefficients have been derived by assuming a definite causal system, whereas, regression constants are derived from a completely different assumption, viz, that we wish to maximize the multiple correlations between a given dependent variable and a certain list of independent variables. One interpretation of the results, then, is that they show the conditions for interpreting regression constants estimated by a "least-squares" criterion as parameters in a causal system.

Returning to the hypothetical example of a three-variable status system, a zero is assigned to identify the low level on each of the variables and 1 to identify the high level on each variable. Of course, such conventions are arbitrary, but one does require some method for keeping track of the outcomes on each variable for large numbers of people. Using the 0-1 convention will simplify comparisons between path analysis and tables. The relationship between any pair of dichotomous variables can be fully represented by a linear function such as is assumed in path analysis; hence, the hypothetical data can be analyzed with the tools that we have just developed. When the 0-1 scoring rule is applied to dichotomies, the regression slopes (b's) are the percentage differences which have been informally used to index the degree of association in the tables with the exception that the decimal on the percentage is moved two places to the left. For convenience, all three bivariate tables are reproduced here, but the percentages have been changed to proportions so that the b's can be calculated directly from the tables.

	F_H	F_L
S_H	.60	.36154
S_L	.40	.63846
	1.00	1.00

b_{SF} = .60 - .36154 = .23846

	F_H	F_L
S_H	.62	.38
S_L	.38	.62
	1.00	1.00

b_{SE} = .62 - .38 = .24

	F_H	F_L
E_H	.50	.30769
E_L	.50	.69231
	1.00	1.00

b_{EF} = .50 - .30769 = .19231

Five significant digits have been carried to insure agreement between the paths and the results based on tables. The last table cross-classifying father's status with son's education must be recalculated using the row totals as the proportion base in order to find b_{FE}.

	F_H	F_L	
E_H	.60*	.40	1.00
E_L	.40*	.60	1.00

$$b_{FE} = .60 - .40 = .20$$

It is only a quirk of the hypothetical data that causes the totals to add to 1 in both directions. The 1.00's have been placed in the margin of each row to emphasize the fact that row totals are used as the base. Subtractions for finding slopes must always be across levels of the base. Hence, it was the .60 and the .40 in the first column (asterisks for emphasis) which entered into the calculation for b_{FE}. Enough information to calculate all the path coefficients is now available. From the first equation in (3) we find:

$$P_{EF} = b_{EF} = .19231$$

Using formulas (4) and (5) gives:

$$P_{SF} = \frac{.23846 - (.24)(.19231)}{1 - (.19231)(.20)} = .20$$

$$P_{SE} = \frac{.24 - (.23846)(.20)}{1 - (.19231)(.20)} = .20$$

Notice that the values of the path coefficients exactly match the corresponding percentage differences in the three variable tables with the decimal on the percentages moved two places to the left.[7] For the path from father's status to son's status, arrange the three-variable table to show the control for education:

	E_H	
	F_H	F_L
S_H	.70	.50
S_L	.30	.50
	1.00	1.00

	E_L	
	F_H	F_L
S_H	.50	.30
S_L	.50	.70
	1.00	1.00

$$P_{SF} = .70 - .50 = .50 - .30 = .20$$

For the path from education to son's status, rearrange the three variable table to show the control for father's status:

	F_H	
	E_H	E_L
S_H	.70	.50
S_L	.30	.50
	1.00	1.00

	F_H	
	E_H	E_L
S_H	.50	.30
S_L	.50	.70
	1.00	1.00

$$P_{SE} = .70 - .50 = .50 - .30 = .20$$

Again, it is only a quirk of the hypothetical data that the two arrangements of the table are the same. Normally, both the tables and the paths would differ (i.e., $P_{SF} \neq P_{SE}$ in general).

The second formula in system (3) provides the basis of a useful interpretation.

$$\begin{aligned} b_{SF} &= P_{SF} + P_{SE}b_{EF} \\ .23846 &= .20 + (.20)\,(.19231) \\ &= .20 + .03846 \end{aligned}$$

The first term (.20) is the direct effect of father's occupational status on the occupational status of the son. The second term (.03846) is the indirect effect of father's status as it operates through education on son's status. If this data represented actual observations one would conclude that the bulk of the association

(.23846) between father's and son's status does not operate through education. On the other hand, the third formula in (3) allows a decomposition of the relationship between education and son's status:

$$b_{SE} = P_{SF}b_{FE} + P_{SE}$$

$$.24 = (.20)\ (.20) + .20$$

$$= .04 \qquad + .20$$

The second term in this expansion (.20) is the direct effect of education on son's status, but the first term is not an indirect effect. Son's education cannot operate on father's status to produce an indirect effect on the son's status, rather, the first term might best be interpreted as a "spurious" part (Finney, 1972). Since the spurious or noncausal part of the relationship is small compared to the path (P_{SE}), one would conclude that education does make a difference in the level of status attained.

It may be helpful to note the correspondence between the three ideal typical mobility systems and the expectations generated by each type of system for the paths. The first mobility regime was labeled "closed" or "sponsored." The relationship between educational and occupational achievement had to be zero when father's status was "controlled," i.e., $P_{SE} = 0$. On the other hand, the path from father's status to son's status should be substantial, $P_{SE}>0$. The second type of mobility system demanded that whatever influence status origin exercises on son's status level must operate through education, i.e., $P_{SF} = 0$, and $P_{SE}>0$. Finally, the "open" system requires that the direct path from father's status to education and from father's status to son's status be zero, i.e., $P_{EF} = P_{SF} = 0$.

What can be learned from the path analysis that cannot be gleaned from the tables? First, the process of finding the formula for the paths identified the assumptions required to interpret the relationships as causal. Needless to say, the same assumptions also apply to the tables. Secondly, a series of summary coefficients were defined that made the presentation and interpretation of data an easier task. The slopes and paths provide succinct summaries of information in the tables, and the decomposition of the slopes into direct effects and indirect or noncausal parts, depending on the ordering of the independent and control variables, also facilitates interpretation.[8] The main advantages of path analysis can be more clearly seen when handling many variables simultaneously. What can be learned from the tables that is not contained in the path analysis? For the three dichotomous variables, the main information in the tables which is hidden by the paths is the fact that the conditional or partial relationships are the same whether one is looking at high or low levels of the control variable, that is, there is no interaction in the data. Or, it is said the relations are additive. For example, when father's status is the "control" variable, the relationship between education and son's status is the same for sons whose fathers hold high status jobs (.70 - .50 = .20) as for sons whose fathers hold low status jobs (.50 - .30 = .20). Were this not the case, the path coefficient would be a (weighted) average of the two conditional slopes. Consequently, path analysis assumes additive or non-interactive relationships.

Assumptions of Path Analysis

The previous discussion was intended to provide the reader with a conceptual basis for interpreting the method of analysis used in Chapter V of this report. For simplicity, the descriptions were based on three dichotomous variables, but path analysis is generally used when approximations to interval data are available. While some of the assumptions of path analysis were encountered in the discussion of the dichotomous variables, it is not surprising to find that some assumptions were not drawn out in that discussion. A systematic presentation of the main assumptions implied by use of linear recursive path analysis follows for the sake of completeness.[9] The reader should be reminded that most of the assumptions that are made in using path analysis coincide with those made in utilizing the general linear model. Assumptions three and four below are particularly important when a causal argument is made using any general model. The worth of the causal argument made with path analysis is highly dependent on how well assumptions three and four are met.

Assumption 1: The relationships among the variables in the system are linear. To say that two variables are related by a linear function is to say that the dependent variable (y) can be written in terms of the independent variable (x) in a particular algebriac form:

$$y = a + bx$$

where a and b are constant across levels of x and y. Such a function produces a straight line on a graph, hence, the name linear. One example of a nonlinear function is given by a parabola whose equation is:

$$y = a + bx + cx^2$$

where a, b, and c are constants. Linear path analysis assumes away such functions. For example, the relationship between age and income may fit a parabola with c negative. Such a relationship could be spotted in tabular presentation provided that at least three levels of x were maintained. Suppose both age and income are collapsed into trichotomous variables, the following hypothetical data represent the general form of the relationship.

	AGE		
Income	Young	Middle Age	Old
High	20%	40%	20%
Medium	30	40	30
Low	50	20	50
Totals	100	100	100

Note that income is low for young people, high for middle age people, and low again for old people; hence, the relationship is not linear.[10] As previously noted, however, a straight line is always the best fit for dichotomous data.

The linear form of path analysis leads to a useful interpretation of the path coefficients. Suppose y is affected by two measured variables x_1 and x_2 and a unique variable or "disturbance," say u, as follows:

$$y = a + p_{y1}x_1 + p_{y2}x_2 + u$$

Now, suppose both x_2 and u do not change but x_1 changes by one unit. Suppose, further, that y_o is the initial value of y and y_1 the value of y after x_1 changes one unit, from x_{10} to x_{11}, i.e., change in $x_1 = x_{11} - x_{10} = 1$. To calculate the change in y:

$$\begin{aligned} \text{change in } y &= y_1 - y_o \\ &= (a + p_{y1}x_{11} + p_{y2}x_2 + u) \\ &\quad -(a + p_{y1}x_{10} + p_{y2}x_2 + u) \\ \hline &= p_{y1}\,(x_{11} - x_{10}) = p_{y1}x_1 \\ &= p_{y1} \end{aligned}$$

Hence, if all other variables are constant, a one-unit change in x_1 produces a change equal to the path (p_{y1}) connecting y to x.[11] When all variables are standardized so that their means are zero and standard deviations unity, path coefficients assume an even more specialized interpretation. One unit now becomes equal to the size of the standard deviation in the original scale. One may say that the path p_{y1} represents the proportion of a standard deviation which y changes if x_1 changes by one full standard deviation, given that all other variables are constant (including the disturbance).

Assumption 2: Relationships among the variables are additive.[12] The term additivity simply means that the affect of x on y does not change depending on levels of other variables. The meaning of additivity was illustrated in the previous discussion where it was noted that the impact of education on occupational achievement is the same (in the hypothetical data) for both levels of status origin.

Assumption 3: The causal ordering of the variables must be known independently of the relationships observed in the data. This assumption is particularly important when cross-sectional samples are used to draw inferences about causal relationships. The assumption of causal ordering was illustrated in the discussion of the three-variable mobility system where it was noted that the direction of cause between father's status and son's education is known *prior* to collecting any data. The term *recursive* is generally used to indicate that there are no "feedback loops" in the system, i.e., no variable affects a second variable and is also affected *by* the second variable.

Assumption 4: The correlations between independent variables in each equation of the system and the "disturbance" for that equation is zero.[13] This assumption was encountered in developing the formulas (equations (3), (4) and (5)), for path coefficients in the three-variable status system.

Assumption 5: The variables are measured accurately. The assumption of measurement accuracy is, perhaps, an obvious one. It is worth noting, however, that when "control" variables are imperfectly measured, zero expectations about partial relationships illustrated in the ideal-typical mobility systems will not be observed in the data (Blalock, 1964: p. 149).

Assumption 6: The assumptions required for multivariate regression are satisfied (see Heise, 1969: p. 57). Usual formulas for calculating tests of significance for regression coefficients are based on certain assumptions: (a) the samples are drawn at random, (b) the multivariate distribution of the data exhibits homoscedastic characteristics, (c) the independent variables for each structural equation are not collinear, (d) and measurements approximate continuous scales. The assumption of random sampling is widely familiar and needs no further discussion here. The assumption of homoscedasticity requires that the variance of the disturbance terms is the same for all levels of the independent variables. The assumption that collinearity does not exist in the set of independent variables simply means that these variables cannot be too highly correlated, otherwise, it will be difficult to separate the effects of one from the other. The assumption of interval scale measurement, is probably not crucial. Wright (1960: pp. 107-109) argues that correlations can be used on a variety of data so long as one is clear about the interpretation of his results. (See, also, Labovitz, 1970)

The list of assumptions of path analysis may appear burdensome. The most critical assumptions are those about causal ordering and the nature of variables not actually observed ("disturbances"). It should be emphasized that no method of analysis of non-experimental data can avoid assumptions about these factors. In particular, use of tables holds no advantage over path analysis whatsoever in this regard.

Tabular presentations of relationships do present certain obvious advantages, however. Assumptions of linearity, additivity and level of measurement are not required of tables. Neither are assumptions of multiple regression analysis required for tables. On the other hand, much can be gained by imposing these assumptions. In practice, it is impossible to use tables to analyze more than three or possibly four variables simultaneously. The number of cells in a multivariate table increases exponentially with the number of variables. The temptation is to collapse levels of all variables to the minimum (2) in order to conserve observations, thus wasting information and indirectly imposing the linearity assumption. Even with two levels for all variables, a ten variable table generates 1024 cells and a fifteen variable table requires 32,768 cells. In practice, it is impossible, to analyze systems containing even a moderate number of variables with tables. In contrast, linear algebraic systems used in path analysis can readily accommodate ten or fifteen variables. In addition, path analysis supplies a parsimonious representation of the data thus easing the burden of presentation and the interpretation of data and facilitating use of formal reasoning in theoretical arguments. Finally, path analysis makes the assumptions of causal inference more explicit than is usually the case in social research.

Justification of Use of Path Analysis

Since linear recursive path models are used in the data analysis of this report, it is fair to ask: how well do the data to be analyzed meet the assumptions? With respect to linearity and additivity it is likely that few, if any, significant departures from these assumptions exist in the data. Fortunately, the research reported here represents a part of a growing body of research on the process of status attainment in the United States. Gasson and associates (Gasson, Haller, and Sewell, 1972) conducted a thorough analysis of data similar to that reported herein in search of curvilinear and interactive relationships. They concluded that the basic process of status attainment can be accurately represented with linear, additive models.

It is often difficult to judge the degree of measurement error in a data set. The reader is referred to Appendix C for a description of the measurements for each variable used in this report. In general, we may offer the judgment that measurements are not so inaccurate as to create a major obstacle to our inferences. Most of the main variables used in the analysis are straightforward. The background variables include father's education, mother's education, and father's occupational status. The occupation of respondents' fathers was assigned a status score using Duncan's SEI scoring method (Duncan, 1961). The scoring method has been used for several years by a variety of sociologists with success. The education variables are based on number of years of schooling completed as reported by the parent; hence, should not pose any major difficulty. In addition, high school grade point and I.Q. scores are a part of the analysis. Grade point averages were taken from school records, I.Q. was measured by the Henmon-Nelson Test of Mental Ability (reliability = .949 corrected, Lamke and Nelson, 1973). The main dependent variables are educational and occupational plans of the students in the sample. The best evidence that such variables are measured with reasonable accuracy is given by their substantial correlation with actual attainment (Sewell, Haller, Portes, 1969; Sewell, Haller, Ohlendorf, 1970). In addition, a class of variables which may be termed "social psychological" in nature are measured. Of these, by far the most important are the "significant other" variables. Instruments were sent to each person identified by students as important to his choice of occupational and/or educational plans, i.e., to each student's "significant others." The recipient of the questionnaire was then asked for his expectations regarding the student's career. The high correlation between the "significant others'" plans for the student and the student's plans for himself suggests that the measuring technique is reasonably accurate.

The sample of respondents selected for this research was selected on a random probability basis and is fully described in Chapter III of the report. Regarding the assumption of homoscedasticity, it should be noted that the assumption does not affect the bias of the path coefficients in large samples. Coefficients are unbiased for large samples (i.e., consistent) without respect to homoscedasticity. It is in sampling fluctuations from sample to sample that this assumption is relevant. Standard formulas for the standard error of regression coefficients are derived with the assumption of homoscedasticity. There is evidence, however, that the assumption is not crucial in practice. The reader can judge for himself whether our independent variables are highly related. Appendix C contains a correlation matrix including every variable used in the models in this report. In any case, standard formulas for the standard error of the regression coefficients automatically account for collinearity among the independent variables except in the extreme cases where two or more variables are perfectly related by a linear function.[14] Most of the data used here may best be describe as ordinal scales which approximate interval data. It is well known that smooth curves can often approximate discrete data fairly closely. For example, the normal curve gives a good approximation of the binomial distribution for moderately large samples (e.g., $N \geq 30$). Also, there is evidence that ordinal transformation of data do not seriously affect the basic statistics in use here (Labovitz, 1970).

The requirement that all variables be given an unequivocal causal ordering and the assumptions that the "disturbance" variables in each equation are uncorrelated with the independent variables in that equation pose perennial problems. It is impossible to rule out two-way effects between the members of some of the variable pairs under study here. For example, consider the following seven variables which are an important part of this report:

x_1 = father's occupational status

x_2 = father's education

x_3 = mother's education

x_4 = I.Q.

x_5 = academic performance (AP)

x_6 = parents' educational expectations for their children

x_7 = youth's educational expectations for himself

One cannot altogether rule out the possibilities that IQ and AP mutually affect each other, although it is assumed that the dominant effect runs from IQ to AP. Neither can one unequivocally eliminate the possibility that a respondent's own educational plans influence the expectations his parents hold for him, but in this report it is assumed that the dominant effect runs from parents' expectations to the child's plans. Using the method of indirect least-squares, estimates of effects running in both directions among the four variables labeled y (IQ, AP, parents' educational expectations for their children, youth's educational expectations for himself) could be generated. One must pay a price, however, for the estimates of all possible reciprocal effects among the variables. It must be assumed that the x variables (background variables) have no direct impact on the y variables, e.g., the impact of father's status on the youth's educational plans operates only indirectly through the other variables. (See, e.g., Johnston, 1963, Goldberger, 1964; Malinvaud, 1966; Fisher, 1966.) At least three objections may be raised against such assumptions. First, how could an x variable (exogenous variable) indirectly affect a given y variable (endogenous variable) if that exogenous variable did not directly impact on at least one other endogenous variable? Secondly, as careful inspection of the estimating equations for indirect least squares will show (see one of the references cited above), the correlations among the endogenous variables do not enter into the estimation of paths when indirect least squares is used. Thus, for example, the information contained in the high correlation between the parents' expectation for their son and the son's own plans would be lost. Finally, a central focus of this research is to interpret the relationships between status origins (e.g., the x variables) and career plans by finding social-psychological variables which intervene between the two classes of variables. Arbitrarily, setting the direct effects from the background variables to career plans to zero assumes the very point that is attempted to be shown.

In this report the strategy of ordering variables on the basis of best judgment as to the dominant direction of cause was adopted. In effect, the adopted strategy agrees with Rosenberg (1968: p. 12) when he argued:

> Does this mean that if it is at all possible for the dependent variable to influence the independent variable, then one can no longer treat the relationship as asymmetrical? This appears to be the position taken by Srole and his colleagues. . . .
>
> Such a position strikes us as excessively rigid. Survey research must allow for the dominant direction of influence of variables. (Italics in the original.)

It is important to note that one cannot avoid the necessity of ordering variables by avoiding use of path and analysis. One of the advantages of using path analysis is that it makes such assumptions explicit.

FOOTNOTES

[1] This model is given solely for the purpose of describing the method and should not be taken as a serious theoretical statement.

[2] For a more complete exposition of the correspondence between table "elaboration" and theory see Zeisel (1957), Lazarsfeld (1958), Kendall and Lazarsfeld (1950), Kendall (1955), Rosenberg (1968), or Hirschi and Selvin (1967).

[3] That the percentages are the same whether education or father's status is considered the "control" variable is an unusual feature of the hypothetical data.

[4] Each variable is generally taken in "standard" form, i.e., with zero mean and unit variance, in the sociology literature. But, this convention is not necessary and is not followed in the present exposition because to do so is to confuse the comparisons with the tabular presentations. See Wright (1960) for a discussion of the relative merits of standardized vs. unstandardized path coefficients.

[5] That is $b_{yx} = C_{xy}/V_{xy} = \Sigma(x-\bar{x})y/\Sigma(x-x)^{-2}$, where $C_{xy} = \Sigma(x-\bar{x})y/N$ is the covariance between the variables x and y, and $V_x = \Sigma(x-\bar{x})^2/N = \Sigma(x-\bar{x})X/N$ is the variance of x.

[6] Zero values for bivariate slopes assures zero correlations.

[7] These equalities hold exactly when the assumption of homoscedasticity is met but may not hold otherwise.

[8] Lazarsfeld and his associates have given a similar breakdown of coefficients of association. The measures which they provide are unsatisfactory insofar as they fail to create a reasonable standardization norm. They do not mask the interaction in the partial tables as does the path analysis, however.

[9] For extended treatment of these assumptions, see Heise, 1969; Land, 1969; Goldberger, 1964; Johnston, 1963; Blalock, 1964; Duncan, 1966; Blau and Duncan, 1967.

[10] Path analysis can be adapted to handle departures from linearity.

[11] It should be noted that the term "change" can be taken literally to indicate change from one time to the next only for panel data. Otherwise it refers to differences between individuals.

[12] Path analysis can also be adapted to handle interaction.

[13] A number of methods have been developed by econometricians for dealing with violations of this assumption, e.g., two-stage least squares, indirect least squares, etc. See Goldberger (1964) or Johnston (1963) for readable discussions of simultaneous equation systems.

[14] This point can be seen by inspection of the formula for standard errors of regression coefficients contained in any text-books on the subject, e.g., Williams, 1959.

APPENDIX C

OPERATIONALIZATION OF VARIABLES AND DESCRIPTIVE STATISTICS

Operationalization of Variables and Descriptive Statistics

The variables discussed in this section were used in the calculations of the models presented in this report. The questionnaire will be referenced frequently in this section instead of reproducing each of the actual items from which subsequent variables were operationalized. The entire instrument elicited data on more variables than were actually used in the analysis. A good portion of the data of these "extraneous" variables was used in cross checking the validity of responses of some of the variables. For example, parents' self-report of occupational and educational attainment was cross checked for validity against son's report of parents' attainment. Much of the information collected was used in this type of measurement analysis.

A complete list of operationalizations of variables appears in this appendix along with the descriptive statistics for each of the variables used in the models. All references to such items in the questionnaire refer to Appendix D. When particular items are cited in the instrument, they will be referenced by divisions within the instrument as follows: SID-I (Student's first battery), SID-II (Student's second battery), PID-I (father's questionnaire), PID-II (mother's questionnaire), DDP (demographic data page), ODS (questionnaire for significant others who are occupational definers), EDS (qeustionnaire for significant others who are educational definers), EDSO (student questionnaire identifying significant others who are educational definers), EMSO (student questionnaire identifying significant others who are educational models), ODSO (student questionnaire identifying significant others who are occupational definers), and OMSO (student questionnaire identifying significant others who are occupational models).

Sibling Order (SIBO): measured by placing student in the correct birth order by age sequencing the total number of siblings in the family unit. See SID-I, question 1 and 2.

Father's Education (Son's report) (FES): measured by asking the son to respond to an item asking number of years of schooling completed by his father. (See SID-I, question 19)

Mother's Education (Son's report) (MES): measured by asking the son to respond to an item asking number of years of schooling completed by his mother. (See SID-I, question 20)

Number of Siblings (FS): measured by addition of son's report of number of brothers and sisters, plus one to include the respondent. See items SID-I, question 1 and 2.

Family Type (FT): measured by asking the son to describe his domicile with respect to which adults were living in the household. The item is open-ended in the sense that if the child were not living with both parents, he was asked to identify who the adult members of the household were. See SID-I, question 6.

Perceived College Plans of Peers (PP): measured by son's response to a single item which elicits the subject's perception of his peers' educational plans. See SID-I, question 7.

Son's Occupational Aspiration Scale (OAS): measured by the summation of the eight item Occupational Aspiration Scale that the student completed for himself. The occupational aspiration scale is discussed under the variable: *Aggregated Significant Other's Occupational Aspiration Scale for Ego* (SOIO). For the son's scale, see SID-II, questions 1-8.

Son's Occupational Information (STOI): measured by the student's responses to the three item sets described under the variable: Father's Occupational Information (FOI) (Parnes et al.,, 1969). See SID-II, 44-71.

Son's Occupational Fantasy Choice (OF): measured by the son's response to a single, open-ended item eliciting the occupation he would choose if no restrictions existed (Picou, 1971). The occupation named was then converted to the appropriate socioeconomic index (Duncan, 1961) in order to obtain a measure of prestige for that job. See ODSO, Question 1.

Son's Occupational Aspiration (OA): measured by the son's response to a single open-ended item asking which occupation he will attempt to secure (Picou, 1971). The appropriate socioeconomic index was then assigned to each named occupation. See ODSO, question 2.

Son's Occupational Expectation (OE): measured by the son's response to a single open-ended item asking which occupation the student realistically expects to secure (Picou, 1971). The appropriate socioeconomic index was then assigned to each named occupation. See ODSO, question 3.

Son's Educational Fantasy Choice (EF): measured by the son's response to a single item gauging ideal educational achievement (Kuvlesky and Bealer, 1966). See EDSO, question 1.

Son's Educational Aspiration (EA): measured by the son's response to a single item gauging the projection of educational achievement he will atempt to secure (Picou, 1971). See EDSO, question 2.

Son's Educational Expectation (EE): measured by the son's response to a single item eliciting his projection of educational reality (Kuvlesky and Bealer, 1966). See EDSO, question 3.

Perceived Teacher Educational Encouragement (TEE): measured by son's response to a single item gauging perceived encouragement to educational advancement (Haller, Woelfel, and Fink, 1969). See EDSO, question 7.

Father's Occupation (FO): measured by asking the father to respond to an open-ended question which asked him to indicate what job he held. If the father was unemployed at the time of the study, the last job held was elicited. The identified job was coded with the appropriate socioeconomic index (Duncan, 1961) in order to obtain a measure of prestige for that job. The item appears in Appendix D, PID-I, question 2.

Father's Education (FE): measured by asking the father to indicate how much education he completed from an exhaustive categorical list of years of school completed. The item occurs in PID-I, question 3.

Father's Occupational Information (FOI): measured by the summation of father's responses to three subscales gauging correctness of information of certain occupational types (Parnes et al., 1969). The three subscales consist of ten items, ten items, and eight items, respectively. The first set of items presents alternative job descriptions for ten occupations from which the respondent must choose the correct description. Correct identification of each job description adds a value of two to the summary measure producing a range of 0-20 for the first set of items.

The second ten item set elicits information concerning the number of years of schooling necessary to obtain a certain occupation. Again, a 0-20 range was constructed. A value of 2 was awarded for a "correct" response.

The third item set consists of pairs of occupations from which the person chooses that occupation which earns the greatest income. A value of 2 was awarded to the correct response producing a 0-16 range. The Father's Occupational Information Score is a simple summation of the total scores on the three item-sets. See PID-I, questions 14-41.

Mother's Education (ME): measured by asking the mother to indicate how much education she completed by responding to the same list to which the father responded. See PID-2, question 3.

Mother's Occupational Information (MOI): measured by mother's responses to the three item sets described above, (Parnes et al., 1969). See PID-II, 14-41.

Son's IQ (MA): measured by the Henmon-Nelson Test of Mental Ability, Revised Edition, Form A for grades 9-12 during the same occasion that students filled out other questionnaires for this study. This is a thirty minute, timed, commercial test published by the Houghton-Mifflin Company, Boston. The test consists of ninety items arranged in order of increasing abilities which might negate any successful attempt to obtain the desired job (Henmon and Nelson, 1942).

Achievement Motivation (AM): This construct was measured by the achievement scale of the Edwards Personal Preference Schedule (EPPS). The EPPS is a commercial personality inventory published by the Psychological Corporation, New York.

Each item of the EPPS is composed of two statements which are matched for social desirability. The respondent must choose one statement in each item pair as either being most descriptive or least descriptive of himself. The forced-choice, paired-comparison format of the EPPS requires that the total score for each subject be constant, therefore, the scores are ipsative. The range for the ipsative scores is 0 to 28. The raw achievement scores for each student in this study were converted to the appropriate normative score, which is ranged 1-99, (Klett, 1957). The mean, standard deviation and Spearman-Brown corrected split-half reliability coefficient for the ipsative scores taken as the normative sample of high school boys are 13.88, 4.01, and .53 respectively (Klett, 1957).

Academic Performance (AP): grade point average calculated directly from grade transcripts for each student which were provided by the high school participating in the study. Grades from physical education and shop courses such as metalwork, woodwork, printshop, etc., were not utilized in the calculation of grade point average.

Mean Parental Occupation Aspiration Scale for Son (OASP): measured by an average of parents' responses to the Occupational Aspiration Scale for their son. The Occupational Aspiration Scale is described under variable Significant Others Occupational Aspiration Scale for Ego (SOIO) (Haller and Miller, 1972). The above averaged values are summary measures of the eight-item scale. See PID-I, questions 4-11 for father's items; see PID-II, questions 4-11 for mother's items.

Mean Parental Educational Aspirations for Son (EAP): measured by an average of father's and mother's response to a single item eliciting aspirations for son (Haller, Woelfel with Fink, 1969). See PID-I, question 12 for father's item; PID-II, question 12 for mother's item.

Mean Parental Educational Expectations for Son (EEP): measured by an average of the parents' responses to single items eliciting their feeling of educational expectations for their son (Haller, Woelfel with Fink, 1969). See PID-I, question 13 for father's item; see PID-II, question 13 for mother's item.

Aggregated SES Index (SES): was calculated to be the average standard score of father's educational and occupational attainment and mother's educational attainment. The individual items used in the aggregated index are described above.

Academic Self-Concept (ASC): measured by the average of the student's responses to the three-item set which elicits the student's self-rating in comparison with his educational peers in the school environment. The three items establish three criteria of self-rating for the student, general school ability, intelligence, and reading skills. See SID-I, questions 3, 4, 5.

I-E Personal Control (IEP): measured by the internal control items of Valecha's (1972) reduced form of Rotter's (1966) 29-item scale of the locus of control. Valecha's reduced form contains eleven items; four internal, seven external, (Valecha, 1972). Personal control is measured by the average of the student's response to the four internal items in Valecha's scale. See SID-I, questions 10, 11, 12 and 15.

I-E Ideal Control (IEI): measured by the student's response to the seven external items of Valecha's (1972) 11-item scale described above. The student's responses to the seven items are averaged to produce the ideal control score. See SID-I, questions 8, 9, 13, 14, 16, 17 and 18.

Goal Impedance Internal (GII): measured by the average of the student's responses to a four-item set identifying internal sources of hinderance in the student's attempt to secure his desired occupation (Curry and Picou, 1971). See SID-II, questions 13, 18, 19, 20.

Goal Impedance, External (GIE): measured by the average of the student's response to an eight-item set measuring external sources of hinderance to the student in his attempt to secure his desired occupation (Curry and Picou, 1971). See SID-II, questions 9, 10, 11, 12, 14, 15, 16 and 17.

Educational Values (EV): measured by the average of the student's responses to a 23-item scale eliciting values concerning education's utility in personal development and economic advancement for the student (Bachman, 1970). Appropriate items in the scale were reflected before computing the total score. See SID-II, questions 21-43.

Self-Esteem (SE): measured by the average of the student's response to a 12-item set of semantic differential type items. The 12-item set gauges the student's self-esteem in the school environment (Baron et al., 1969). See SID-II, question 72.

Perceived Parental Educational Encouragement (PEE): measured by averaging son's response to items gauging independently perceived mother's and father's encouragement to further son's education. In the instance of a missing parent, the available parent's score is used as the averaged variable (Sewell, Haller and Portes, 1969). See EDSO, questions 4 and 5.

Total Perceived Educational Encouragement (aggregated) (PSOI): measured by a simple arithmetic average of three items, i.e., perceived teacher and parental encouragement and peer plans.

Non-parental Significant Others' Educational Aspirations for Ego (EANP): measured by an average of non-parental significant others' responses to single items eliciting educational aspirations for the subject that had named them as significant others. See EDS, question 1.

Non-parental Significant Others' Educational Expectations for Ego (EENP): measured by an average of non-parental significant others' responses to single items eliciting educational expectations for the students that had named them as significant others. See EDS, question 2.

Non-parental Significant Others' Occupational Aspiration Scale for Ego (OASNP): measured by an average of all non-parental significant others' score on the Occupational Aspiration Scale for the subject that had named them as significant others. The Occupational Aspiration Scale is discussed under the variable, Aggregated Significant Others' Occupational Aspirations for Ego (SOIO) (Haller and Miller, 1972). See ODS, questions 1-8.

Aggregated Significant Others' Educational Aspirations for Ego (SOEA): measured by an average of three items: mother's and father's indications of educational aspirations for their son plus an aggregated measure for all other significant others named. The aggregated measure for all others is the response of non-parental significant others named by the subject to a given item eliciting aspirations for the child. See PID-I, question 12 for father's; PID-II, question 12 for mother's; see EDS, question 1 for non-parental significant others.

Aggregated Significant Others' Educational Expectations for Ego (SOIE): measured by an average of three items: mother's and father's indications of educational expectations for their son plus an aggregated measure for all other significant others named. The aggregated measure for all others is the averaged response of non-parental significant others named by the given subject to a given item eliciting expectations for the child. See PID-I, question 13 for the father's item; PID-II, question 13 for the mother's item; and for non-parental significant others see EDS, question 2.

Aggregated Significant Others' Occupational Aspiration Scale for Ego (SOIO): measured by an average of mother's, father's, and all other non-parental significant others' (aggregated) responses to an eight-item, bidimensional Occupational Aspiration Scale. The items elicit occupational aspirations at both the idealistic and realistic levels. Each of the above levels is defined within two time periods, short-range (end of schooling) and long-range (at age thirty). There are four possible combinations of the above components, hence, eight items are required. The alternatives for each item are derived from the occupations ranked by the National Opinion Research Center (1947). An occupation is presented only once on the form. The occupations chosen are response alternatives which systematically span the entire range of occupational prestige (Haller and Miller, 1972). See PID-I, questions 4-11 for father's; for mother's see PID-II, questions 4-11; and for non-parental significant other's see ODS, questions 1-8.

Race of Significant Other (RSO): measured by significant other's response to a single item eliciting race. See DDP.

Race of Ego (R): measured by asking the student's parents a single item to identify their own race. The student's race was then determined from their responses. See PID-I, question 1, and PID-II, question 1.

Relationship of Significant Other to Student (REL): measured by the student's response to items eliciting relationship of significant other to the student who had named them. See EDSO, page 5; ODSO, page 5; OMSO, page 2; and EMSO, page 2.

Data Availability of Significant Other (DAV): measured by an item completed by the researcher dependent upon the receipt or non-receipt of completed significant other questionnaires from all the significant others contacted.

The remainder of this appendix presents the variable list and mnemonics, tables of means and standard deviations, and tables of correlations among variables. The variables in the tables are indexed by numbers which correspond to the numbers associated with the variables in the "Variable List and Mnemonics." The tables are presented for the total sample, for Black, and for Whites, in that order.

VARIABLE LIST AND MNEMONICS

1 - Sibling Order (SIBO)
2 - Father's Education (Son's report) (FES)
3 - Mother's Education (Son's report) (MES)
4 - Number of Siblings (FS)
5 - Family Type (FT)
6 - College Peer Plans (PP)
7 - Occupational Aspiration Scale for Son (OAS)
8 - Son's Occupational Information (STOI)
9 - Son's Occupational Fantasy Choice (OF)
10 - Son's Occupational Aspirations (OA)
11 - Son's Occupational Expectations (OE)
12 - Son's Educational Fantasy Choice (EF)
13 - Son's Educational Aspirations (EA)
14 - Son's Educational Expectations (EE)
15 - Perceived Teacher's Educational Encouragement (TEE)
16 - Father's Occupation (FO)
17 - Father's Education (FE)
18 - Father's Occupational Information (FOI)
19 - Mother's Education (ME)
20 - Mother's Occupational Information (MOI)
21 - I.Q. (MA)
22 - EPPS Achievement Motivation (AM)
23 - Academic Performance (AP)
24 - Mean Parental Occupational Aspiration Scale for Son (OASP)
25 - Mean Parental Educational Aspirations for Son (EAP)
26 - Mean Parental Educational Expectations for Son (EEP)
27 - Aggregated SES (SES)
28 - Academic Self-Concept (ASC)
29 - I-E Personal Control (IEP)
30 - I-E Ideal Control (IEI)
31 - Goal Impedence Internal (GII)
32 - Goal Impedence External (GIE)
33 - Educational Values (EV)
34 - Self-Esteem (SE)
35 - Perceived Parental Educational Encouragement (PEE)
36 - Total Perceived Educational Encouragement (PSOI)
37 - Non-parental Significant Others' Educational Aspirations for Ego (EANP)
38 - Non-Parental Significant Others' Educational Expectations Scale for Ego (EENP)
39 - Non-parental Significant Others' Occupational Aspiration Scale for Ego (OASNP)
40 - Aggregated Significant Others' Educational Aspirations for Ego (SOEA)
41 - Aggregated Significant Others' Educational Expectations for Ego (SOIE)
42 - Aggregated Significant Others' Occupational Aspiration Scale for Ego (SOIO)

Table 1-C Zero Order Correlations for the Total Sample

	1	2	3	4	5	6	7	8	9
1	1.00000								
2	-0.17120	1.00000							
3	-0.20014	0.46194	1.00000						
4	0.68597	-0.27706	-0.17460	1.00000					
5	-0.08701	0.13493	0.04020	-0.21032	1.00000				
6	0.00787	0.27740	0.25416	-0.09547	-0.00358	1.00000			
7	-0.17260	0.30995	0.19822	-0.20135	0.03961	0.24155	1.00000		
8	-0.05539	0.15079	0.17072	-0.15352	0.02685	0.15179	0.28957	1.00000	
9	-0.05448	0.24173	0.11420	-0.15271	0.00475	0.17536	0.42884	0.25781	1.00000
10	-0.01959	0.25097	0.12303	-0.12618	0.05696	0.29965	0.44288	0.32979	0.64132
11	-0.10117	0.26477	0.22518	-0.18624	-0.06988	0.29609	0.51097	0.27471	0.54171
12	-0.08774	0.22984	0.13948	-0.12029	-0.00334	0.26226	0.49766	0.24716	0.40076
13	-0.05790	0.31816	0.19746	-0.13988	0.02234	0.37415	0.58647	0.21382	0.42157
14	-0.07155	0.27078	0.26168	-0.16825	-0.00872	0.41269	0.56478	0.22261	0.36210
15	0.01986	0.06628	0.04801	-0.04771	0.00947	0.22944	0.13927	0.20283	0.05001
16	-0.10684	0.50505	0.28381	-0.14512	0.04281	0.19908	0.25514	0.16693	0.22714
17	-0.15440	0.74932	0.44872	-0.19961	0.08855	0.24835	0.27421	0.32808	0.22325
18	-0.03179	0.30312	0.25723	-0.15682	0.06467	0.09919	0.15324	0.34006	0.13588
19	-0.12250	0.38649	0.60802	-0.15686	-0.04079	0.21266	0.22935	0.27190	0.15990
20	-0.03061	0.26072	0.28919	-0.11427	0.04941	0.16071	0.16436	0.24145	0.06620
21	-0.16586	0.37243	0.25421	-0.26960	0.12491	0.23327	0.27317	0.06408	0.27544
22	-0.08691	-0.11245	-0.01457	0.04576	-0.13248	0.06041	0.05324	0.01063	-0.02157
23	-0.24020	0.25863	0.25690	-0.20235	0.07249	0.17123	0.26299	0.32396	0.22571
24	-0.15121	0.21486	0.22944	-0.15047	-0.00340	0.20002	0.50243	0.27021	0.44232
25	-0.02519	0.19181	0.29522	-0.06174	0.01781	0.22257	0.36653	0.15588	0.35306
26	-0.12310	0.42083	0.33655	-0.23164	-0.01915	0.30046	0.55371	0.26495	0.40983
27	-0.12335	0.62134	0.55296	-0.18410	0.02727	0.25592	0.32280	0.32101	0.27162
28	0.03062	-0.18007	-0.20099	0.00594	-0.01397	-0.30517	-0.28586	-0.16903	-0.18689
29	-0.08550	-0.01230	-0.02387	-0.10343	0.01410	0.08711	0.05141	0.10193	0.06235
30	0.00956	-0.04953	-0.05748	0.04115	0.00614	-0.01583	0.17403	0.27987	0.15486
31	0.04825	0.01674	-0.02937	0.12350	-0.05746	-0.06111	-0.08167	-0.23373	0.01439
32	0.07220	-0.09326	-0.11521	0.11214	-0.05617	-0.08880	-0.08716	-0.25516	0.01310
33	0.11182	0.05207	-0.03983	0.02052	-0.03325	0.24931	0.29992	0.14571	0.30301
34	0.00486	0.01506	0.05365	-0.00023	0.07418	0.10272	0.20956	0.11922	0.09954
35	0.00168	0.14635	0.16803	0.00613	-0.05221	0.35124	0.28233	0.13126	0.23649
36	0.00901	0.22980	0.22473	-0.05469	-0.03549	0.70186	0.32535	0.18381	0.23659
37	-0.11706	0.12848	0.09278	-0.07216	-0.03372	0.28718	0.26357	0.09367	0.13594
38	-0.05823	0.26916	0.27351	-0.13225	-0.07788	0.39644	0.42641	0.23873	0.29280
39	-0.17345	0.09583	0.12853	-0.15014	0.05019	0.26571	0.39162	0.36364	0.29604
40	-0.06974	0.13365	0.25288	-0.04482	-0.00605	0.18203	0.33837	0.12796	0.24787
41	-0.07491	0.33893	0.32041	-0.16956	-0.02975	0.33376	0.52066	0.27096	0.36313
42	-0.16342	0.15665	0.19977	-0.14777	0.05840	0.19972	0.49837	0.37436	0.38327

Table 1-C Zero Order Correlations for the Total Sample Cont'd.

	10	11	12	13	14	15	16	17	18
10	1.00000								
11	0.63132	1.00000							
12	0.47833	0.46791	1.00000						
13	0.51067	0.51575	0.81395	1.00000					
14	0.39751	0.49222	0.62707	0.79376	1.00000				
15	0.08650	0.12895	0.15499	0.14884	0.16427	1.00000			
16	0.24850	0.30283	0.16251	0.25611	0.33413	0.00314	1.00000		
17	0.22943	0.29683	0.17191	0.27059	0.33146	0.06449	0.57348	1.00000	
18	0.15196	0.18426	0.12570	0.05763	0.11557	0.00260	0.35873	0.36778	1.00000
19	0.22636	0.24473	0.15698	0.23161	0.24004	0.12773	0.28047	0.45000	0.29096
20	0.07643	0.14715	0.12644	0.15546	0.25497	0.02128	0.28927	0.24611	0.41406
21	0.36069	0.26701	0.33221	0.31077	0.31252	0.11222	0.40526	0.44146	0.31850
22	0.07104	0.07107	0.04977	0.15211	0.09255	0.08754	-0.02359	-0.08318	-0.12912
23	0.29432	0.23698	0.33851	0.33605	0.33551	0.08804	0.16235	0.28685	0.13706
24	0.41927	0.40070	0.44696	0.46541	0.45515	0.13608	0.26945	0.20213	0.13002
25	0.33100	0.31339	0.35233	0.39750	0.39460	0.12783	0.23685	0.18380	0.18295
26	0.50343	0.56968	0.47089	0.57893	0.61342	0.09888	0.37187	0.37842	0.21693
27	0.30423	0.35032	0.21532	0.32339	0.34747	0.12014	0.61185	0.84087	0.42387
28	-0.19499	-0.26361	-0.37721	-0.39712	-0.36777	-0.22387	-0.15368	-0.17169	-0.05456
29	0.08502	0.09377	0.12026	0.07807	0.11561	0.00680	0.10265	0.05001	0.03883
30	0.13198	0.02370	0.16196	0.10996	0.08570	0.06543	-0.00743	0.02305	0.20203
31	0.07258	-0.09867	-0.10416	-0.10444	-0.09402	-0.07886	-0.05659	-0.04948	-0.14098
32	0.01124	-0.09305	-0.08327	-0.12559	-0.11931	-0.03535	-0.23871	-0.20967	-0.14960
33	0.26314	0.21013	0.38040	0.42455	0.34125	0.25631	0.02553	0.01487	0.02070
34	0.11583	0.16163	0.15702	0.16729	0.20038	0.05885	-0.04059	-0.06403	-0.00626
35	0.30082	0.25913	0.35380	0.44419	0.42747	0.26766	0.12665	0.18373	-0.07912
36	0.34382	0.33153	0.37769	0.48019	0.49137	0.57630	0.17338	0.24634	0.00671
37	0.26733	0.25872	0.30874	0.31481	0.27975	0.16260	0.10625	0.15613	-0.05891
38	0.41851	0.37930	0.46372	0.53727	0.53996	0.21753	0.25717	0.29390	0.11162
39	0.37038	0.30321	0.38833	0.42013	0.56745	0.16820	0.15163	0.12228	0.08629
40	0.30543	0.30401	0.33410	0.39094	0.35138	0.18900	0.21303	0.18830	0.06504
41	0.45729	0.47510	0.48470	0.56646	0.56919	0.18342	0.35659	0.33865	0.19941
42	0.43453	0.36966	0.40480	0.44116	0.38387	0.21679	0.24420	0.18452	0.13789

Table 1-C Zero Order Correlations for the Total Sample Cont'd.

	19	20	21	22	23	24	25	26	27
19	1.00000								
20	0.36805	1.00000							
21	0.30088	0.26911	1.00000						
22	-0.05912	-0.15525	-0.00237	1.00000					
23	0.21780	0.05406	0.51119	0.04722	1.00000				
24	0.27769	0.19529	0.38715	0.02115	0.38202	1.00000			
25	0.33622	0.16722	0.23318	0.05872	0.16956	0.49889	1.00000		
26	0.43306	0.26087	0.39196	0.06712	0.46464	0.62976	0.52923	1.00000	
27	0.81609	0.36941	0.42901	-0.07377	0.26618	0.32967	0.34182	0.48451	1.00000
28	-0.12535	-0.01515	-0.31476	-0.15059	-0.41959	-0.34968	-0.15869	-0.44611	-0.19111
29	0.05837	0.07417	0.04679	0.18556	0.06294	0.12063	0.05627	0.13702	0.10065
30	0.00094	-0.05797	0.16280	0.02664	0.06953	0.12477	0.11486	0.13867	0.00431
31	-0.06662	-0.17304	-0.23441	-0.05666	-0.04473	-0.09323	-0.11085	-0.07476	-0.10142
32	-0.17261	-0.27127	-0.32375	-0.00625	-0.12421	-0.13248	-0.16118	-0.13610	-0.23566
33	-0.00136	-0.03321	0.11232	-0.02037	0.22886	0.27464	0.24361	0.27530	0.03141
34	0.06316	-0.05116	0.00366	-0.00721	0.04349	0.25151	0.17458	0.20251	0.05983
35	0.19745	0.14094	0.04837	0.04957	0.19036	0.27236	0.25285	0.38126	0.21164
36	0.24454	0.15364	0.19743	0.08184	0.21404	0.29216	0.30409	0.39914	0.27462
37	0.14510	-0.00893	0.14200	0.16404	0.31985	0.33659	0.13101	0.38506	0.17936
38	0.36983	0.19998	0.24399	0.13167	0.41364	0.49759	0.35192	0.63537	0.38447
39	0.12113	0.06972	0.42317	0.05213	0.48666	0.50028	0.23416	0.41840	0.17863
40	0.29955	0.12533	0.20013	0.14671	0.27373	0.50180	0.64410	0.53429	0.30830
41	0.43054	0.25224	0.34742	0.07398	0.42599	0.60041	0.46148	0.66254	0.46857
42	0.18462	0.13413	0.40139	0.05874	0.41327	0.79177	0.41292	0.54701	0.26494

	28	29	30	31	32	33	34	35	36
28	1.00000								
29	-0.07864	1.00000							
30	-0.12932	0.21536	1.00000						
31	0.10807	-0.20658	-0.12278	1.00000					
32	0.03567	-0.12559	-0.07733	0.68792	1.00000				
33	-0.24805	0.03654	0.10232	-0.09815	-0.04141	1.00000			
34	-0.28676	0.06762	0.14473	-0.14232	-0.10211	0.28363	1.00000		
35	-0.22726	0.00232	-0.02443	-0.00108	-0.09126	0.23227	0.11616	1.00000	
36	-0.33083	0.05922	0.00447	-0.04907	-0.10436	0.32523	0.12938	0.84624	1.00000
37	-0.29504	0.07758	0.03224	0.04773	0.11533	0.13582	0.20327	0.42930	0.42140
38	-0.39861	0.12376	0.14435	-0.13404	-0.10153	0.29635	0.27778	0.41254	0.48695
39	-0.38981	0.06977	0.15497	-0.22906	-0.19438	0.25415	0.33082	0.24288	0.31908
40	-0.27270	0.08560	0.09247	-0.07436	-0.06999	0.18167	0.23655	0.42420	0.39331
41	-0.43356	0.14451	0.16280	-0.13967	-0.16595	0.28630	0.30501	0.42223	0.45863
42	-0.39497	0.10946	0.19463	-0.18507	-0.19615	0.23090	0.30880	0.21420	0.28453

```
                 37         38         39         40         41         42

    37        1.00000
    38        0.60508    1.00000
    39        0.49810    0.61077    1.00000
    40        0.79082    0.61141    0.47528    1.00000
    41        0.55315    0.41582    0.56029    0.62563    1.00000
    42        0.41738    0.59363    0.85991    0.54266    0.62723    1.00000
```

Table 2-C Means and Standard Deviations for the Total Sample

```
                MEANS       STANDARD DEVIATION

    1        0.26492D 01   0.17511D 01
    2        0.12805D 02   0.26661D 01
    3        0.12673D 02   0.21777D 01
    4        0.44056D 01   0.23198D 01
    5        0.82009D 00   0.38419D 00
    6        0.27195D 01   0.10114D 01
    7        0.47819D 02   0.11295D 02
    8        0.31544D 02   0.79403D 01
    9        0.57496D 02   0.25781D 02
   10        0.53807D 02   0.27141D 02
   11        0.49487D 02   0.26301D 02
   12        0.16402D 02   0.28957D 01
   13        0.16169D 02   0.26121D 01
   14        0.15422D 02   0.24237D 01
   15        0.35041D 01   0.75841D 00
   16        0.39781D 02   0.24888D 02
   17        0.74293D 01   0.27655D 01
   18        0.42932D 02   0.71426D 01
   19        0.71234D 01   0.19079D 01
   20        0.40115D 02   0.83543D 01
   21        0.96195D 02   0.14401D 02
   22        0.54674D 02   0.26577D 02
   23        0.19817D 01   0.87403D 00
   24        0.54222D 02   0.95704D 01
   25        0.58067D 01   0.12966D 01
   26        0.40823D 01   0.15298D 01
   27       -0.14949D-01   0.84880D 00
   28        0.27664D 01   0.75604D 00
   29        0.27339D 01   0.57538D 00
   30        0.26632D 01   0.46332D 00
   31        0.73085D 00   0.62937D 00
   32        0.84980D 00   0.52719D 00
   33        0.51038D 01   0.87212D 00
   34        0.53611D 01   0.67188D 00
   35        0.38594D 01   0.76463D 00
   36        0.34810D 01   0.61757D 00
   37        0.54528D 01   0.13227D 01
   38        0.40365D 01   0.13594D 01
   39        0.53932D 02   0.47623D 01
   40        0.56068D 01   0.11012D 01
   41        0.40638D 01   0.13114D 01
   42        0.53993D 02   0.89671D 01
```

Table 3-C Zero Order Correlations for the Black Sample

	1	2	3	4	5	6	7	8	9
1	1.00000								
2	-0.18178	1.00000							
3	-0.13031	0.28971	1.00000						
4	0.70295	-0.22104	-0.10520	1.00000					
5	-0.18264	0.12336	0.01471	-0.28787	1.00000				
6	0.09305	0.11716	0.23765	0.02586	0.03884	1.00000			
7	-0.14958	0.29326	0.12792	-0.18833	0.04061	0.02715	1.00000		
8	0.02228	-0.05150	0.13615	-0.08174	-0.02631	0.07765	0.31485	1.00000	
9	0.03564	0.23248	0.06270	-0.13047	0.00496	0.02069	0.41073	0.30674	1.00000
10	-0.00092	0.14224	0.02004	-0.11460	0.10700	0.03272	0.33396	0.36306	0.66298
11	0.03249	0.21524	0.17285	-0.10234	-0.04926	0.01651	0.40444	0.25454	0.55548
12	0.00561	0.17623	0.09014	-0.14613	0.04436	0.05077	0.43715	0.22429	0.39007
13	0.01850	0.22394	0.05411	-0.17145	0.04803	0.17317	0.46250	0.16967	0.36872
14	0.00212	0.25465	0.23584	-0.11911	-0.05168	0.27275	0.42431	0.17187	0.26349
15	0.06107	0.03518	0.01110	-0.01977	0.03325	0.23021	0.06851	0.21027	-0.00313
16	-0.24735	0.29170	0.05839	-0.11445	0.00255	-0.10562	0.06228	-0.10181	0.09279
17	-0.18004	0.57873	0.13691	-0.18092	0.06988	0.16185	0.22086	0.24015	0.18699
18	-0.01368	0.19124	0.20689	-0.10143	0.01576	-0.06007	0.25058	0.23146	0.23608
19	-0.06350	0.27393	0.51013	-0.19107	-0.07677	0.18413	0.20457	0.22934	0.15879
20	0.04525	-0.01826	0.18331	0.03600	-0.02777	0.06575	0.13131	0.11342	0.01447
21	-0.04095	0.22962	0.10584	-0.14913	-0.08762	-0.00316	0.25238	0.33197	0.28415
22	-0.12130	0.00782	0.04416	-0.00554	-0.07470	0.12553	0.02857	0.05499	0.05906
23	-0.20361	0.18161	0.19470	-0.17276	-0.01406	0.04253	0.29918	0.30695	0.35366
24	0.07154	0.14477	0.18648	-0.02326	0.01284	-0.00407	0.43031	0.28857	0.42707
25	0.14351	0.14589	0.35409	-0.01108	0.00393	0.07652	0.35282	0.25374	0.29234
26	-0.00432	0.33149	0.25977	-0.23162	-0.08430	0.07847	0.45207	0.17074	0.44562
27	-0.06615	0.47267	0.36310	-0.17054	-0.02086	0.11371	0.29844	0.21656	0.25831
28	-0.12283	-0.11790	-0.18942	-0.03237	0.00875	-0.18804	-0.13388	-0.00288	-0.12140
29	-0.15411	-0.00820	-0.04234	-0.24382	0.10748	0.04317	-0.00971	0.11237	0.04455
30	0.08638	0.02205	-0.00897	0.08450	-0.03611	-0.08662	0.12595	0.24295	0.16915
31	0.03211	0.06996	-0.08017	0.16516	-0.09965	0.05313	-0.01834	-0.32926	-0.07128
32	0.05660	0.02081	-0.14974	0.10316	-0.08876	0.03135	-0.09906	-0.28354	-0.01962
33	0.24519	0.13719	-0.00403	0.02855	0.05469	0.25924	0.23526	0.19538	0.32478
34	0.10502	0.03577	0.22545	0.01501	0.12630	-0.00674	0.11609	0.19414	0.21524
35	0.09931	0.08256	0.04370	0.07536	-0.13669	0.35726	0.14244	0.13018	0.10243
36	0.11010	0.11167	0.12967	0.04208	-0.06629	0.69587	0.13076	0.12563	0.07584
37	0.00998	0.11668	-0.05735	0.04997	-0.11010	0.24360	0.08594	0.08432	0.06699
38	0.08464	0.22478	0.21346	-0.12472	-0.12967	0.27030	0.39353	0.27541	0.39869
39	0.01749	0.04391	0.10506	0.04487	-0.00188	0.05322	0.29603	0.38382	0.24301
40	0.05614	0.07498	0.17078	0.02341	-0.10200	0.03027	0.28977	0.17041	0.17895
41	-0.02661	0.28032	0.24958	-0.19474	-0.07279	0.11645	0.48400	0.20880	0.45445
42	-0.02736	0.07648	0.19306	-0.02050	0.07997	-0.04306	0.44057	0.45512	0.34985

Table 3-C Zero Order Correlations for the Black Sample Cont'd.

	10	11	12	13	14	15	16	17	18
10	1.00000								
11	0.56314	1.00000							
12	0.42455	0.41558	1.00000						
13	0.39144	0.46070	0.78072	1.00000					
14	0.17413	0.42348	0.48516	0.66493	1.00000				
15	-0.02527	0.10486	0.04394	0.05254	0.11341	1.00000			
16	0.08088	0.18792	-0.04866	0.07063	0.18182	0.02332	1.00000		
17	0.24344	0.24409	0.00781	0.08017	0.19666	-0.01472	0.41248	1.00000	
18	0.31946	0.25648	0.26540	0.08478	0.11701	-0.05515	0.30054	0.36227	1.00000
19	0.17355	0.24324	0.10549	0.16515	0.21936	0.09097	0.18416	0.35663	0.27036
20	-0.05658	0.08472	0.15371	0.11596	0.28072	0.05697	0.12028	0.00304	0.23170
21	0.31557	0.16978	0.31042	0.20146	0.23086	0.10248	0.28860	0.31269	0.27565
22	0.02229	0.05578	0.15119	0.21767	0.16645	0.02089	0.12428	0.01642	-0.03914
23	0.28849	0.31921	0.26873	0.32070	0.31482	-0.02287	-0.03872	0.19937	0.07866
24	0.38976	0.34442	0.34220	0.32887	0.30372	0.02939	0.13477	0.07571	0.20689
25	0.26049	0.26530	0.23449	0.32834	0.33011	0.10780	0.11024	0.16507	0.26439
26	0.37083	0.52284	0.30574	0.40811	0.44879	0.00454	0.18177	0.14802	0.25705
27	0.25814	0.33804	0.14135	0.25388	0.30631	0.08174	0.72063	0.77641	0.41597
28	-0.08448	-0.11916	-0.22451	-0.14184	-0.20536	-0.20437	0.06182	0.02480	-0.06844
29	0.05417	0.05096	0.12792	0.10594	0.04905	-0.00457	0.07947	0.06666	0.03777
30	0.12433	-0.08724	0.06873	0.05417	0.03213	0.03880	0.04125	0.12332	0.30851
31	0.09807	-0.04206	-0.09133	-0.11529	-0.07503	-0.20492	-0.00962	-0.00354	-0.07923
32	0.08405	0.01862	-0.05231	-0.17034	-0.14271	-0.12195	-0.07339	-0.05376	0.01605
33	0.24509	0.21998	0.34966	0.41361	0.30837	0.20878	-0.05930	0.12418	0.06734
34	0.13333	0.05678	0.15300	0.13186	0.14262	0.06981	-0.04835	0.02719	0.02723
35	-0.01253	0.07651	0.18533	0.20545	0.27761	0.36233	-0.15419	0.04162	-0.11325
36	0.01553	0.11183	0.14671	0.21973	0.31997	0.65368	-0.11518	0.12170	-0.08248
37	0.16519	0.04276	0.18778	0.15956	0.08213	0.06403	0.02281	0.18097	0.07456
38	0.36739	0.35329	0.41805	0.48079	0.47947	0.13731	0.17486	0.23775	0.20471
39	0.25151	0.16197	0.23029	0.26152	0.13135	0.07057	0.12034	0.05451	0.16380
40	0.19326	0.16653	0.23676	0.27635	0.19724	0.17330	0.18742	0.13401	0.19284
41	0.36331	0.42137	0.38519	0.42054	0.42298	0.07478	0.27714	0.22404	0.26129
42	0.37598	0.28932	0.22537	0.24640	0.15025	0.15178	0.22018	0.10680	0.22854

Table 3-C Zero Order Correlations for the Black Sample Cont'd.

	19	20	21	22	23	24	25	26	27
19	1.00000								
20	0.27378	1.00000							
21	0.22696	0.09478	1.00000						
22	-0.07097	-0.01461	0.00716	1.00000					
23	0.09312	-0.03855	0.40178	0.09616	1.00000				
24	0.29431	0.20281	0.38055	-0.03297	0.34532	1.00000			
25	0.36906	0.13955	0.22371	0.00951	0.11278	0.41628	1.00000		
26	0.40564	0.18279	0.32169	0.03421	0.46333	0.57849	0.45166	1.00000	
27	0.81151	0.20027	0.34139	-0.03391	0.11844	0.30422	0.34306	0.40554	1.00000
28	-0.13910	-0.01947	-0.22573	-0.04283	-0.30831	-0.27481	-0.10036	-0.35154	-0.10712
29	0.09360	0.17421	0.14887	0.12847	0.05615	0.07585	0.01223	0.05606	0.09737
30	-0.00887	-0.09229	0.26705	-0.05003	0.17753	0.22319	0.16155	0.13000	0.01550
31	-0.16278	-0.21709	-0.31746	-0.00977	-0.12044	-0.11207	-0.12025	-0.06068	-0.11998
32	-0.20528	-0.23703	-0.34270	-0.05906	-0.16770	-0.15441	-0.19816	-0.08397	-0.13451
33	-0.03966	0.03795	0.19094	-0.09208	0.20487	0.30655	0.23768	0.28408	0.04279
34	0.18387	-0.02590	0.16431	-0.13310	0.17918	0.37604	0.19168	0.13336	0.17524
35	0.17125	0.08705	0.00419	0.00229	0.21163	0.05349	0.02720	0.16876	0.09367
36	0.19559	0.07424	0.04476	0.06738	0.12028	0.06451	0.13706	0.15039	0.12716
37	0.03843	-0.05066	0.07730	0.21332	0.20891	0.09677	-0.11856	0.20630	0.11478
38	0.34657	0.24545	0.32715	0.08716	0.37092	0.41626	0.28891	0.54383	0.36523
39	0.09830	0.03995	0.40843	0.12595	0.33161	0.28064	0.05040	0.19448	0.17565
40	0.23890	0.11292	0.21880	0.17907	0.20832	0.43397	0.57927	0.42987	0.26462
41	0.42531	0.25022	0.36864	0.02673	0.43775	0.58723	0.38514	0.31899	0.43962
42	0.20023	0.09202	0.38644	0.05692	0.35989	0.69304	0.32381	0.41832	0.27949

	28	29	30	31	32	33	34	35	36
28	1.00000								
29	0.00339	1.00000							
30	-0.08425	0.05152	1.00000						
31	0.07075	-0.10572	-0.03739	1.00000					
32	-0.06584	0.02661	-0.06285	0.76085	1.00000				
33	-0.25474	0.03945	0.12194	-0.22702	-0.13777	1.00000			
34	-0.31369	-0.01298	0.11435	-0.25557	-0.20323	0.41345	1.00000		
35	-0.18204	-0.05013	-0.04751	-0.13853	-0.18134	0.33094	0.09593	1.00000	
36	-0.24583	-0.01008	-0.04036	-0.11903	-0.12274	0.35963	0.07088	0.64066	1.00000
37	-0.16110	-0.02196	0.07471	-0.04221	0.03725	0.13225	0.20904	0.33860	0.29285
38	-0.31745	0.16079	0.29228	-0.23355	-0.17765	0.37729	0.28160	0.17883	0.26820
39	-0.25101	0.12015	0.25529	-0.39872	-0.27614	0.30989	0.45738	-0.00322	0.06181
40	-0.14160	0.00609	0.15515	-0.21201	-0.21699	0.19154	0.35395	0.20335	0.20759
41	-0.34466	0.09420	0.22114	-0.19644	-0.19891	0.33288	0.32970	0.13943	0.16403
42	-0.26018	0.04612	0.29906	-0.28170	-0.29159	0.24387	0.46381	-0.11183	-0.00773

	37	38	39	40	41	42
37	1.00000					
38	0.40122	1.00000				
39	0.43119	0.54811	1.00000			
40	0.68202	0.48655	0.42789	1.00000		
41	0.35016	0.89161	0.48242	0.53823	1.00000	
42	0.24169	0.55905	0.66926	0.53244	0.60844	1.00000

Table 4-C Means and Standard Deviations for the Black Sample

	MEANS	STANDARD DEVIATION
1	0.27672D 01	0.16259D 01
2	0.12272D 02	0.22489D 01
3	0.12354D 02	0.22059D 01
4	0.48803D 01	0.25559D 01
5	0.74359D 00	0.43665D 00
6	0.27217D 01	0.10004D 01
7	0.48328D 02	0.11067D 02
8	0.29709D 02	0.67169D 01
9	0.59143D 02	0.25557D 02
10	0.53053D 02	0.26357D 02
11	0.51294D 02	0.25936D 02
12	0.16638D 02	0.27241D 01
13	0.16440D 02	0.25369D 01
14	0.15552D 02	0.24472D 01
15	0.25133D 01	0.84262D 00
16	0.32152D 02	0.22668D 02
17	0.65802D 01	0.22600D 01
18	0.40111D 02	0.73703D 01
19	0.69000D 01	0.18437D 01
20	0.37229D 02	0.90378D 01
21	0.89254D 02	0.13557D 02
22	0.59527D 02	0.23688D 02
23	0.17310D 01	0.82409D 00
24	0.54095D 02	0.99019D 01
25	0.58973D 01	0.12103D 01
26	0.41216D 01	0.15483D 01
27	-0.20649D 00	0.76631D 00
28	0.27279D 01	0.75504D 00
29	0.27393D 01	0.53349D 00
30	0.26630D 01	0.44650D 00
31	0.81322D 00	0.67900D 00
32	0.10065D 01	0.55504D 00
33	0.52011D 01	0.81248D 00
34	0.54904D 01	0.69553D 00
35	0.39914D 01	0.68539D 00
36	0.35385D 01	0.61898D 00
37	0.58666D 01	0.11071D 01
38	0.42566D 01	0.12845D 01
39	0.52886D 02	0.97283D 01
40	0.58852D 01	0.65614D 00
41	0.42183D 01	0.12829D 01
42	0.53534D 02	0.91672D 01

Table 5-3 Zero Order Correlations for the White Sample

	1	2	3	4	5	6	7	8	9
1	1.00000								
2	-0.13769	1.00000							
3	-0.24919	0.56734	1.00000						
4	0.67010	-0.27147	-0.19487	1.00000					
5	0.06514	0.09305	0.00960	-0.00793	1.00000				
6	-0.06794	0.39035	0.27626	-0.23202	-0.05455	1.00000			
7	-0.19763	0.33908	0.27298	-0.24006	0.05909	0.40991	1.00000		
8	-0.11936	0.25437	0.15503	-0.16148	0.00624	0.24600	0.30377	1.00000	
9	-0.14155	0.26179	0.17307	-0.19831	0.03693	0.29406	0.43454	0.23704	1.00000
10	-0.01689	0.30287	0.19570	-0.11282	-0.01413	0.51728	0.53421	0.29389	0.62296
11	-0.21984	0.30787	0.28705	-0.24622	-0.12348	0.51631	0.59275	0.34314	0.51657
12	-0.16442	0.26064	0.19539	-0.12172	-0.02559	0.42217	0.53905	0.37205	0.39498
13	-0.12868	0.41003	0.34054	-0.14068	0.03373	0.53600	0.68380	0.31958	0.44951
14	-0.13992	0.47563	0.29889	-0.24536	0.06371	0.53509	0.68665	0.31627	0.43945
15	-0.04033	0.12350	0.10947	-0.11069	-0.01765	0.23735	0.22092	0.22473	0.11712
16	-0.02455	0.55547	0.38464	-0.08347	0.02332	0.41151	0.38596	0.30752	0.32655
17	-0.12822	0.79701	0.60563	-0.11333	0.05054	0.31574	0.30479	0.33347	0.25279
18	-0.06496	0.31306	0.25376	-0.14568	0.04155	0.27715	0.08184	0.34891	0.10297
19	-0.16520	0.44740	0.68423	-0.08731	-0.04704	0.22508	0.25497	0.29170	0.16740
20	-0.10254	0.43313	0.36892	-0.19674	0.02262	0.28451	0.25079	0.29761	0.15514
21	-0.25483	0.38556	0.32881	-0.25990	-0.03335	0.50222	0.38965	0.54637	0.34918
22	-0.06519	-0.16865	-0.03283	0.06305	-0.15259	0.00825	0.04872	0.02777	-0.11701
23	-0.25595	0.22229	0.26076	-0.13581	0.06602	0.26318	0.26154	0.26078	0.14162
24	-0.37450	0.27389	0.27734	-0.29642	-0.02925	0.38435	0.56823	0.26140	0.45634
25	-0.16390	0.23600	0.26718	-0.12526	0.05567	0.33302	0.38775	0.09694	0.39363
26	-0.22436	0.49366	0.41910	-0.22941	0.06336	0.49534	0.64180	0.41076	0.36609
27	-0.12706	0.67227	0.68995	-0.11599	-0.00456	0.36826	0.35553	0.37218	0.29370
28	0.16631	-0.22165	-0.22067	0.04277	-0.05723	-0.39435	-0.40365	-0.32548	-0.21965
29	-0.02831	-0.01797	-0.00726	0.03038	-0.08216	0.11729	0.09316	0.19332	0.07171
30	-0.05611	-0.10466	-0.10410	0.00357	0.05335	0.03864	0.21069	0.28682	0.12398
31	0.05715	-0.02022	0.08374	0.02332	0.06442	-0.21067	-0.18480	-0.07037	0.00481
32	0.06751	-0.12144	-0.01282	0.02255	0.13050	-0.23827	-0.11985	-0.11005	-0.00364
33	-0.00685	0.01938	-0.04917	-0.01835	-0.09153	0.23407	0.33669	0.15704	0.27272
34	-0.12545	0.06215	-0.06645	-0.09794	0.09675	0.19673	0.28766	0.14362	-0.02751
35	-0.08861	0.22759	0.30738	-0.10985	0.09738	0.35084	0.37540	0.20661	0.29935
36	-0.09593	0.34598	0.34049	-0.20002	0.03761	0.70943	0.47771	0.30110	0.34955
37	-0.23956	0.24157	0.27532	-0.24778	0.13760	0.34730	0.36520	0.23577	0.15335
38	-0.19657	0.38360	0.37467	-0.19915	0.02785	0.51415	0.45048	0.29257	0.21291
39	-0.22686	0.10502	0.11829	-0.20955	0.08988	0.42440	0.47178	0.31023	0.32803
40	-0.19745	0.23450	0.38564	-0.18088	0.16495	0.28120	0.37256	0.20536	0.26825
41	-0.13877	0.43085	0.42176	-0.19239	0.06270	0.52089	0.54871	0.41091	0.27488
42	-0.29934	0.20208	0.19340	-0.28767	0.02515	0.41480	0.55200	0.27972	0.40002

Table 5-C Zero Order Correlations for the White Sample Cont'd.

	10	11	12	13	14	15	16	17	18
10	1.00000								
11	0.68699	1.00000							
12	0.51164	0.50137	1.00000						
13	0.60745	0.55023	0.81602	1.00000					
14	0.58488	0.54659	0.73524	0.90601	1.00000				
15	0.22373	0.16358	0.27817	0.26462	0.23366	1.00000			
16	0.32697	0.37427	0.30304	0.40706	0.44891	-0.00544	1.00000		
17	0.18913	0.32193	0.26912	0.40639	0.42327	0.14263	0.59390	1.00000	
18	0.02264	0.16695	0.07357	0.11666	0.13985	0.03874	0.31999	0.31049	1.00000
19	0.28214	0.26570	0.20635	0.30352	0.27083	0.16729	0.47099	0.48720	0.26880
20	0.20880	0.28460	0.16595	0.29062	0.30954	-0.03320	0.36669	0.35454	0.48529
21	0.45217	0.46820	0.50371	0.52106	0.52013	0.20604	0.35060	0.39517	0.17334
22	0.08040	0.04540	0.02995	0.06547	0.01378	0.16888	-0.08566	-0.10698	-0.08157
23	0.28671	0.20054	0.43842	0.40578	0.39061	0.22825	0.15899	0.20572	0.02160
24	0.45246	0.45535	0.54193	0.59522	0.60648	0.24409	0.37625	0.28749	0.05902
25	0.36928	0.33652	0.42458	0.43595	0.44023	0.16072	0.32396	0.20328	0.18051
26	0.61185	0.59892	0.60079	0.72047	0.76433	0.22216	0.49452	0.48124	0.21081
27	0.32154	0.37822	0.28912	0.41077	0.40935	0.17582	0.83445	0.84654	0.37437
28	-0.29121	-0.36691	-0.44023	-0.55844	-0.50944	-0.26765	-0.29258	-0.27732	-0.19083
29	0.10073	0.11883	0.12173	0.05288	0.12651	0.13767	0.13633	0.05556	0.08177
30	0.13091	0.10777	0.12981	0.15176	0.12877	0.09710	-0.04153	-0.03245	0.15790
31	0.03859	-0.20480	-0.15965	-0.14420	-0.14059	0.09076	-0.10850	-0.10566	-0.20634
32	-0.06658	-0.27345	-0.18386	-0.16816	-0.14937	0.07475	-0.33061	-0.29192	-0.20848
33	0.28108	0.18218	0.38913	0.41861	0.36298	0.31513	0.10646	-0.02193	0.04674
34	0.12040	0.24133	0.14144	0.17509	0.25138	0.03964	0.12519	-0.04208	0.12906
35	0.51779	0.37333	0.44797	0.59690	0.53858	0.22143	0.34479	0.29070	0.04130
36	0.61399	0.50152	0.54430	0.68505	0.63903	0.52210	0.40223	0.36094	0.15228
37	0.36291	0.39428	0.30324	0.38924	0.40706	0.26151	0.25798	0.25326	0.00419
38	0.49294	0.40668	0.49285	0.57760	0.59203	0.30039	0.38942	0.41127	0.11702
39	0.44746	0.44694	0.49903	0.54380	0.55296	0.29021	0.15668	0.14211	-0.01512
40	0.39140	0.37753	0.37194	0.43942	0.45155	0.24198	0.31654	0.29396	0.12816
41	0.54641	0.51284	0.55121	0.67544	0.69419	0.31044	0.45525	0.45754	0.21465
42	0.47496	0.44778	0.55258	0.61325	0.60614	0.31191	0.27084	0.24612	0.07917

Table 5-C Zero Order Correlations for the White Sample Cont'd.

	19	20	21	22	23	24	25	26	27
19	1.00000								
20	0.45366	1.00000							
21	0.33923	0.23595	1.00000						
22	-0.02930	-0.20196	0.11220	1.00000					
23	0.27844	-0.02588	0.48204	0.06791	1.00000				
24	0.26381	0.20161	0.49162	0.06560	0.44654	1.00000			
25	0.32641	0.25163	0.36215	0.05049	0.25284	0.57604	1.00000		
26	0.46918	0.42027	0.56431	0.05512	0.50001	0.68962	0.58969	1.00000	
27	0.82684	0.48067	0.40042	-0.07535	0.27775	0.36383	0.37238	0.56672	1.00000
28	-0.12252	-0.05651	-0.51074	-0.19753	-0.55393	-0.42177	-0.18753	-0.51206	-0.25382
29	0.04019	0.01454	0.09038	0.21700	0.07567	0.15766	0.07884	0.14463	0.11663
30	0.01104	-0.01967	0.17690	0.06804	-0.00662	0.04752	0.07631	0.14118	-0.00706
31	0.03657	-0.05678	-0.12962	-0.15674	0.05336	-0.08521	-0.12721	-0.12439	-0.07387
32	-0.09882	-0.14722	-0.14328	-0.07359	0.02864	-0.11577	-0.19860	-0.24645	-0.26685
33	0.03612	-0.06061	0.15047	-0.01500	0.30337	0.24965	0.23522	0.25871	0.03852
34	0.00631	0.07361	-0.00593	0.02722	0.12697	0.13451	0.13605	0.26018	0.03721
35	0.24608	0.31909	0.30816	0.02129	0.24369	0.43366	0.36089	0.54632	0.34253
36	0.30039	0.31884	0.46643	0.06069	0.33168	0.50684	0.42752	0.62151	0.42411
37	0.27864	0.21547	0.45268	0.06629	0.53926	0.55626	0.26996	0.53155	0.33758
38	0.43220	0.29332	0.49383	0.12939	0.55652	0.58852	0.39949	0.74381	0.49813
39	0.12774	0.04401	0.44014	0.02366	0.58482	0.68406	0.38627	0.61215	0.15237
40	0.39944	0.32154	0.45625	0.06739	0.44830	0.61088	0.69653	0.62965	0.43662
41	0.46968	0.38447	0.54435	0.06779	0.52893	0.65158	0.51803	0.51445	0.56414
42	0.16827	0.18237	0.46612	0.06454	0.47157	0.88988	0.49383	0.07177	0.24889

	28	29	30	31	32	33	34	35	36
28	1.00000								
29	-0.13691	1.00000							
30	-0.16326	0.33333	1.00000						
31	0.20461	-0.32252	-0.22061	1.00000					
32	0.20703	-0.29504	-0.10661	0.59133	1.00000				
33	-0.22354	0.02887	0.08582	-0.02871	-0.02386	1.00000			
34	-0.24179	0.13261	0.17526	-0.08303	-0.11737	0.14370	1.00000		
35	-0.24269	0.03123	-0.01262	0.06118	-0.13521	0.14236	0.10084	1.00000	
36	-0.39591	0.11621	0.03962	-0.02479	-0.16865	0.28133	0.15507	0.85695	1.00000
37	-0.37555	0.12707	-0.00319	0.03552	0.02120	0.08071	0.13386	0.47090	0.49736
38	-0.47631	0.09880	0.03645	-0.08744	-0.13354	0.22426	0.24660	0.54052	0.64876
39	-0.52711	0.03709	0.07339	-0.07530	-0.09155	0.22684	0.30950	0.60757	0.54489
40	-0.34616	0.12351	0.05718	-0.05982	-0.12121	0.13911	0.12206	0.48263	0.45686
41	-0.50654	0.17856	0.11549	-0.12936	-0.22758	0.23109	0.26014	0.60459	0.69856
42	-0.51435	0.15671	0.10580	-0.10576	-0.10272	0.23093	0.20736	0.45498	0.55863

	37	38	39	40	41	42
37	1.00000					
38	0.72197	1.00000				
39	0.62483	0.65669	1.00000			
40	0.81483	0.67767	0.57084	1.00000		
41	0.67009	0.93644	0.65015	0.68199	1.00000	
42	0.58334	0.65542	0.91946	0.59758	0.66810	1.00000

Table 6-C Means and Standard Deviations for the White Sample

	MEANS	STANDARD DEVIATION
1	0.25692D 01	0.16776D 01
2	0.13208D 02	0.28762D 01
3	0.12923D 02	0.21217D 01
4	0.40231D 01	0.19864D 01
5	0.88462D 00	0.31949D 00
6	0.27132D 01	0.10207D 01
7	0.47354D 02	0.11535D 02
8	0.33185D 02	0.68239D 01
9	0.56126D 02	0.25772D 02
10	0.54228D 02	0.27625D 02
11	0.47516D 02	0.26308D 02
12	0.16185D 02	0.30402D 01
13	0.15915D 02	0.26632D 01
14	0.15292D 02	0.24129D 01
15	0.35000D 01	0.68219D 00
16	0.44887D 02	0.24776D 02
17	0.79815D 01	0.28803D 01
18	0.45120D 02	0.61940D 01
19	0.73145D 01	0.19484D 01
20	0.42645D 02	0.67956D 01
21	0.10208D 03	0.11893D 02
22	0.50070D 02	0.28044D 02
23	0.21657D 01	0.65167D 00
24	0.54343D 02	0.93219D 01
25	0.57137D 01	0.13696D 01
26	0.40161D 01	0.14986D 01
27	0.13965D 00	0.67478D 00
28	0.28154D 01	0.74428D 00
29	0.27269D 01	0.61429D 00
30	0.26615D 01	0.48108D 00
31	0.65827D 00	0.56706D 00
32	0.70833D 00	0.46154D 00
33	0.50138D 01	0.91815D 00
34	0.52403D 01	0.62053D 00
35	0.37500D 01	0.80204D 00
36	0.34308D 01	0.61552D 00
37	0.51101D 01	0.13867D 01
38	0.38651D 01	0.14086D 01
39	0.54980D 02	0.96155D 01
40	0.53704D 01	0.12187D 01
41	0.39282D 01	0.13319D 01
42	0.54520D 02	0.86934D 01

FIP 3019

APPENDIX D

INSTRUMENTATION

This appendix reproduce portions of the questionnaires that were used to gather data for this report. Two primary questionnaires were administered to students (SID-I and SID-II). Only the questions from these two questionnaires that were used in this report are included in the appdendix. In addition, each student completed four questionnaires requesting identification of significant others: EDSO is intended to identify significant others who are educational definers; EMSO is designed to identify significant others who are educational models; ODSO is designed to identify significant others who are occupational definers; and, OMSO is designed to identify significant others who are occupational models. Major portions of these four questionnaires that were not directly used to create the variables listed in Appendix C are included. One questionnaire was sent to each parent of students in the primary sample, PID-I for fathers and PID-II for mothers. Only questions used to create variables listed in Appendix C are included from PID-I and PID-II. A demographic data page (DDP) was attached to questionnaires sent to each parent and to questionnaires sent to nonparental significant others. The DDP is included in this appendix only once and is labeled DDP in the upper right corner. Finally, each significant other who was identified as an occupational definer for the student was sent a questionnaire labeled ODS, and each significant other who was identified as an educational definer for the student was sent a questionnaire labeled EDS.

For reference, the following information is tabulated below: the abbreviation of each questionnaire, the class of persons completing the questionnaire, and the page reference in this appendix where the questionnaire can be found.

Questionnaire	Sample	Page
SID-I	Students	D-3
SID-II	Students	D-7
PID-I	Fathers	D-14
PID-II	Mothers	D-20
DDP	Fathers, Mothers, Significant Others	D-26
ODS	Significant Others	D-27
EDS	Significant Others	D-29
EDSO	Students	D-30
EMSO	Students	D-36
ODSO	Students	D-39
OMSO	Students	D-44

SID-I

INSTRUCTIONS

Answer each of the following questions by circling the number of the proper alternative or placing an "X" in the appropriate column.

1. List the ages of all of your brothers. Answer ______________________________

2. List the ages of all of your sisters. Answer ______________________________

3. How do you rate yourself in school ability compared with those in your grade in school?

(1) far above average
(2) above average
(3) slightly above average
(4) slightly below average
(5) below average
(6) far below average

4. How intelligent do you think you are, compared with other boys your age?

(1) far above average
(2) above average
(3) slightly above average
(4) slightly below average
(5) below average
(6) far below average

5. How good a reader do you think you are, compared with other boys your age.

(1) far above average
(2) above average
(3) slightly above average
(4) slightly below average
(5) below average
(6) far below average

6. Where are you living at present?

_____ with my parents

_____ other (explain) ______________________________

7. Concerning your very close friends, which statement best describes them:

1. Just about all of my close friends are planning to go to college.
2. About half of my close friends are planning to go to college.
3. Only a few of my close friends are planning to go to college.
4. None of my close friends are planning to go to college.

INSTRUCTIONS

First, decide which of the two statements in each question is closer to your opinion. Indicate your answer by writing either "a" or "b" on the broken line provided. *Second*, decide whether the statement that you chose is "much" closer or only "slightly" closer to your opinion. Indicate your answer by placing an "X" in one of the boxes provided. Do not mark in the "code" column.

EXAMPLE

a Statement closer to my opinion

☒ Much closer

☐ Slightly closer

a. No matter how hard you try some people just don't like you.

b. People who can't get others to like them, don't understand how to get along with others.

The above example shows that statement "a" is closer to the persons opinion than is statement "b." Also statement "a" is much closer" to the persons opinion than is statement "b."

SHOW YOUR OPINIONS BELOW

CODE

8. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. Without the right breaks one cannot be an effective leader.

b. Capable people who fail to become leaders have not taken advantage of their opportunities.

9. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

b. Getting a good job depends mainly on being in the right place at the right time.

10. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. What happens to me is my own doing.

b. Sometimes I feel that I don't have enough control over the direction my life is taking.

11. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. When I make plans, I am almost certain that I can make them work.

b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

12. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. In my case, getting what I want has little or nothing to do with luck.

b. Many times we might just as well decide what to do by flipping a coin.

13. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. Without the right breaks, one cannot be an effective leader.

b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it

14. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

b. There really is no such thing as "luck."

15. ---- Statement closer to my opinion

☐ Much closer
☐ Slightly closer

a. Many times I feel that I have little influence over the things that happen to me.

b. It is impossible for me to believe that chance or luck play an important role in my life.

16. ---- Statement closer to my opinion

☐ Much closer

☐ Slightly closer

a. Many of the unhappy things in people's lives are partly due to bad luck.

b. People's misfortunes result from the mistakes they make.

17. ---- Statement closer to my opinion

☐ Much closer

☐ Slightly closer

a. In the long run, people get the respect they deserve in this world.

b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

18. ---- Statement closer to my opinion

☐ Much closer

☐ Slightly closer

a. In the long run, the bad things that happen to us are balanced by the good ones.

b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three

19. What was the highest school grade completed by your father? (Circle one number)

1. Did not go to school
2. First grade
3. Second grade
4. Third grade
5. Fourth grade
6. Fifth grade
7. Sixth grade
8. Seventh grade
9. Eighth grade
10. Ninth grade
11. Tenth grade
12. Eleventh grade
13. Twelfth grade (graduated from high school)
14. Graduated from a vocational-technical school
15. Some college, but did not graduate
16. Graduated from college (B.A. or B.S. degree)
17. Has completed courses on a master's degree
18. Has received a master's degree
19. Has a professional degree (Ph.D., M.D., lawyer, etc.)

20. What was the highest school grade completed by your mother? (Write one number in space provided from the list for question 19.) Answer ______________________________

No. ____________

Confidential

SID-II

GENERAL INSTRUCTIONS

The following questions have no "right" or "wrong" answers. These questions are about your educational and occupational future. Some of the questions are very specific, while others are very general. Please answer all questions even if you must guess. If you have a problem, raise your hand and a research worker will come to your place and assist you. Please continue to answer the items with which you have no problem until the research worker comes to your place. Otherwise, you will not finish on time. All answers will be kept confidential.

Thank you.

Student's Name: ______________________________________
Last First Middle

INSTRUCTIONS:

This set of questions concerns your interest in different kinds of jobs. For the following eight questions, you are to check ONE job in each question. Make sure it is the BEST ANSWER you can give to each question.

Read each question carefully. They are all different. Answer all questions the best you can. Do not omit any, EVEN IF YOU MUST GUESS.

1. If you were JUST OUT OF SCHOOL and LOOKING FOR A JOB, which ONE of the jobs listed in this question is the BEST ONE you are REALLY SURE YOU COULD GET?

    1. _____ Lawyer
    2. _____ Welfare worker for a city government
    3. _____ United States representative in Congress
    4. _____ Corporal in the Army
    5. _____ United States Supreme Court Justice
    6. _____ Night watchman
    7. _____ Sociologist
    8. _____ Policeman
    9. _____ County agricultural agent
    10. _____ Filling station attendant

2. If you were JUST OUT OF SCHOOL and LOOKING FOR A JOB, which ONE of the jobs listed in this question would you choose if you were FREE TO CHOOSE ANY of them you wished?

    1. _____ Member of the board of directors of a large corporation
    2. _____ Undertaker
    3. _____ Banker
    4. _____ Machine operator in a factory
    5. _____ Physician (doctor)
    6. _____ Clothes presser in a laundry
    7. _____ Accountant for a large business
    8. _____ Railroad conductor
    9. _____ Railroad engineer
    10. _____ Singer in a night club

3. If you were JUST OUT OF SCHOOL and LOOKING FOR A JOB, which ONE of the jobs listed in this question is the BEST ONE you are REALLY SURE YOU COULD GET?

    1. _____ Nuclear physicist
    2. _____ Reporter for a daily newspaper
    3. _____ County judge
    4. _____ Barber
    5. _____ State governor
    6. _____ Soda fountain clerk
    7. _____ Biologist
    8. _____ Mail carrier
    9. _____ Official of an international labor union
    10. _____ Farm hand

4. If you were JUST OUT OF SCHOOL and LOOKING FOR A JOB, which ONE of the jobs listed in this question would you choose if you were FREE TO CHOOSE ANY of them you wished?

    1. _____ Psychologist
    2. _____ Manager of a small store in a city
    3. _____ Head of a department in state government
    4. _____ Clerk in a store
    5. _____ Cabinet member in the federal government
    6. _____ Janitor
    7. _____ Musician in a symphony orchestra
    8. _____ Carpenter
    9. _____ Radio announcer
    10. _____ Coal miner

5. If you were 30 YEARS OLD, which ONE of the jobs listed in this question is the BEST ONE you are REALLY SURE YOU COULD GET?

    1. _____ Civil Engineer
    2. _____ Bookkeeper
    3. _____ Minister or Priest
    4. _____ Streetcar motorman or city bus driver
    5. _____ Diplomat in the United States Foreign Service
    6. _____ Share cropper (one who owns no livestock or farm machinery and does not manage the farm)
    7. _____ Author of novels
    8. _____ Plumber
    9. _____ Newspaper columnist
    10. _____ Taxi driver

6. If you were 30 YEARS OLD, which ONE of the jobs listed in this question would you choose if you were FREE TO CHOOSE ANY of them you wished?

1. _____ Airline pilot
2. _____ Insurance agent
3. _____ Architect
4. _____ Milk route man
5. _____ Mayor of a large city
6. _____ Garbage collector
7. _____ Captain in the Army
8. _____ Garage mechanic
9. _____ Owner-operator of a printing shop
10. _____ Railroad section hand

7. If you were 30 YEARS OLD, which ONE of the jobs listed in this question is the BEST ONE you are REALLY SURE YOU COULD GET?

1. _____ Artist who paints pictures that are exhibited in galleries
2. _____ Traveling salesman for a wholesale concern
3. _____ Chemist
4. _____ Truck driver
5. _____ College professor
6. _____ Street sweeper
7. _____ Building contractor
8. _____ Local official of a labor union
9. _____ Electrician
10. _____ Restaurant waiter

8. If you were 30 YEARS OLD, which ONE of the jobs listed in this question would you choose if you were FREE TO CHOOSE ANY of them you wished?

1. _____ Owner of a facotry that employs about 100 people
2. _____ Playground director
3. _____ Dentist
4. _____ Lumberjack
5. _____ Scientist
6. _____ Shoeshiner
7. _____ Public school teacher
8. _____ Owner-operator of a lunch stand
9. _____ Trained machinist
10. _____ Dock worker

INSTRUCTIONS

Indicate how much effect you think each of the following things will have in keeping you from getting the job you desire and will attempt to attain by placing an "X" in the appropriate column.

CODE		Very Much	Much	Some	Not At All
	9. Not enough money to go to technical school or college				
	10. The schools I have gone to				
	11. Lack of Parents' interest				
	12. Racial Discrimination				
	13. Don't want to move				
	14. Good jobs are getting too scarce in the U.S.				
	15. Lack of good job opportunities in or near my community				
	16. No technical school or college nearby				
	17. Don't know enough about the opportunities that exist				
	18. Not smart enough				
	19. I do not know the "right" people				
	20. I will not try hard enough				

INSTRUCTIONS

Indicate how much you agree or disagree with the statements below by placing an "X" in the appropriate column. Do NOT mark in the "Code" column.

D-10

Code	STATEMENTS	Strongly agree	Agree	Mildly agree	Undecided	Mildly disagree	Disagree	Strongly disagree
	21. Even if I could get a very good job at present, I'd still choose to stay in school and get my education.							
	22. I think school is important, not only for the practical value, but because learning itself is very worthwhile.							
	23. School is satisfying to me because it gives me a sense of accomplishment.							
	24. School is very boring for me, and I'm not learning what I feel is important.							
	25. I like school because I am improving my ability to think and solve problems.							
	26. I feel the things I do at school waste my time more than the things I do outside of school.							
	27. I am in school in order to get a job; I don't need the education and training.							
	28. I think this school is a real chance for me; it can make a real difference in my life.							
	29. I enjoy school because it gives me a chance to learn many interesting things.							
	30. I like school because I am learning the things I will need to know to be a good citizen.							
	31. Instead of being in this school, I wish I were out working.							
	32. I feel I can learn more from a very good job than I can here at school.							
	33. Education has a high value because knowing a lot is important to me.							
	34. I have put a great deal of myself into some things at school because they have special meaning or interest for me.							
	35. I can satisfy my curiosity better by the things I learn outside of school than by the things I learn here at school.							
	36. School gives me a chance to be with people my own age and do a lot of things that are fun.							
	37. A real education comes from your own experience and not from the things you learn in school.							
	38. All people should have at least a high school education.							
	39. If I could get the job I wanted, I'd quit school without hesitating.							
	40. I believe an education will help me to be a mature adult.							
	41. I enjoy being in school because I feel I'm doing something that is really worthwhile.							
	42. An education is a worthwhile thing in life, even if it doesn't [illegible]							
	43. I am satisfied with school because I learn more about things I							

INSTRUCTIONS There are several suggested job descriptions for each occupation listed below. Please indicate which job description best fits each job. Read all of the possible answers before you circle the number of your choice. Do not mark in "code" column.

CODE | QUESTIONS

44. Hospital orderly

1. helps to take care of hospital patients
2. orders food and other supplies for hospital kitchens
3. works at hospital desk where patients check in
4. don't know

45. Machinist

1. makes adjustments on automobile, airplane, and tractor engines
2. repairs electrical equipment
3. sets up and operates metal lathes, shapers, grinders, buffers, etc.
4. don't know

46. Acetylene welder

1. builds wooden crates to hold tanks of acetylene gas
2. uses a gas torch to cut metal or join pieces of metal together
3. operates a machine that stitches the soles to the upper parts of shoes
4. don't know

47. Stationary engineer

1. works at a desk, making drawings and solving engineering problems
2. drives a locomotive that moves cars around in a freight yard
3. operates and maintains such equipment as steam boilers and generators
4. don't know

48. Statistical clerk

1. makes calculations with an adding machine or a calculator
2. sells various kinds of office machines and office supplies
3. collects tickets at sports events and other types of entertainment
4. don't know

49. Fork lift operator

1. operates a machine that makes a certain kind of agricultural tool
2. operates a freight elevator in a warehouse or factory
3. drives an electrical or gas powered machine to move material in a warehouse or factory
4. don't know

50. Economist

1. prepares menus in a hospital, hotel, or other such establishment
2. does research on such matters as general business conditions, unemployment, etc.
3. assists a chemist in developing chemical formulas
4. don't know

51. Medical illustrator

1. hands tools and equipment to a surgeon during an operation
2. demonstrates the use of various types of medicines
3. draws pictures that are used to teach anatomy and surgical operating procedures
4. don't know

52. Draftsman

1. makes scale drawings of products or equipment for engineering or manufacturing purposes
2. mixes and serves drinks in a bar or tavern
3. pushes or pulls a cart in a factory or warehouse
4. don't know

53. Social worker

1. works for a welfare agency and helps people with various types of problems they may have
2. conducts research on life in primitive societies
3. writes newspaper stories on marriages, engagements, births, and similar events
4. don't know

INSTRUCTIONS

Indicate how much regular schooling you think is required for each of the occupations below by placing an "X" in the appropriate column. Do not mark in "code" column.

CODE	OCCUPATION	Less than a high school diploma	High school diploma	Some College	College degree	Don't Know
	54. Hospital orderly					
	55. Machinist					
	56. Acetylene welder					
	57. Stationary engineer					
	58. Statistical clerk					
	59. Fork lift operator					
	60. Economist					
	61. Medical illustrator					
	62. Draftsman					
	63. Social worker					

INSTRUCTIONS

Below are a number of pairs of jobs. Indicate which job in each pair you think pays the most money. If you think the 1st job pays more, circle "a". If you think the second job pays more, circle "b". If you don't know, circle "c". Do not mark in "code" column.

CODE	QUESTIONS
	64. a. automobile mechanic b. electrician c. don't know
	65. a. medical doctor b. lawyer c. don't know
	66. a. aeronautical engineer b. medical doctor c. don't know
	67. a. truck driver b. grocery store clerk c. don't know
	68. a. steel mill unskilled laborer b. shoe factory unskilled laborer c. don't know
	69. a. lawyer b. high school teacher c. don't know
	70. a. high school teacher b. janitor c. don't know
	71. a. janitor b. policeman c. don't know

CODE

72. Below you will find a series of scales which can be used to describe yourself in different situations. Each scale consists of an adjective and its opposite. Place an "X" nearest to the adjective that describes you the best. Do not mark in the "code" column.

EXAMPLES

	Extremely	Quite	Slightly	Neither One Nor The Other	Slightly	Quite	Extremely	
SHORT							X	TALL

This person considers herself extremely tall.

SHORT				X				TALL

This person considers herself to be neither short nor tall.

SHORT	X							TALL

This person considers herself to be extremely short.

DESCRIBE YOURSELF AT SCHOOL

	Extremely	Quite	Slightly	Neither One Nor The Ohter	Slightly	Quite	Extremely	
GOOD								BAD
STUPID								SMART
USEFUL								USELESS
DIRTY								CLEAN
HONEST								DISHONEST
ATTRACTIVE								UNATTRACTIVE
WEAK								STRONG
FAST								SLOW
HARD-WORKING								LAZY
CLUMSY								SMOOTH
NEAT								SLOPPY
MEAN								KIND

DESCRIBE YOURSELF AT HOME

	Extremely	Quite	Slightly	Neither One Nor The Other	Slightly	Quite	Extremely	
FAST								SLOW
HONEST								DISHONEST
MEAN								KIND
NEAT								SLOPPY
GOOD								BAD
STUPID								SMART
DIRTY								CLEAN
CLUMSY								SMOOTH
ATTRACTIVE								UNATTRACTIVE
USEFUL								USELESS
WEAK								STRONG
HARD-WORKING								LAZY

For Father or Male Guardian

PID-I

Section I

GENERAL INSTRUCTIONS

The Center for Vocational Education at The Ohio State University is trying to find out what students think about occupations and education. In order to have a successful study we need the aid and cooperation of the parents or guardians of the students who are participating in this study. Your son has been randomly selected to participate in this study. We would greatly appreciate it if you would take the time to complete this questionnaire.

None of the questions you are being asked to answer have "right" or "wrong" answers. We want to know your own personal opinions. It is important that you answer all questions as best you can, *EVEN IF YOU HAVE TO GUESS*.

No one will *see your* specific answers. Special safeguards have been established to make sure that your replies will be kept *strictly confidential*. However, if you feel that any question is improper, please feel free to skip that specific item.*

PLEASE NOTE: If you have any problems or questions concerning the questionnaire, call the following numbers between 9 a.m. and 10:30 p.m. and a researcher will assist you.

A. ____________________

B. ____________________

C. ____________________

*After reading the above instructions, please sign your name.

____ Thank You.

1. Race: a) White b) Black c) Oriental d) Spanish e) Other

2. What is your occupation? (specify the kind of work you do - if you are unemployed, retired or a housewife indicate the last job you held)

____

3. How much schooling did you complete?
   a) none
   b) 1st - 5th grades
   c) 6th grade
   d) 7th - 9th grades
   e) 10th grade
   f) 11th grade
   g) Graduated from high school
   h) Vocational or business school training but did not graduate
   i) Some college but did not graduate
   j) Graduated from vocational or business school
   k) Graduated from college
   l) Graduate school but no advanced degree
   m) Masters degree
   n) Graduate school after masters degree but no doctorate
   o) Doctorate or equivalent degree (M.D., D.D., Ph.D., etc.)

INSTRUCTIONS:

This set of questions concerns your interest in different kinds of jobs for ______________ ______________.

There are eight questions. You are to check ONE job in EACH question. Make sure it is the BEST ANSWER you can give to this question.

Read each question carefully. They are all different. Do not omit any, EVEN IF YOU MUST GUESS.

4. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE HE CAN GET when his SCHOOLING IS OVER?
   1. ______ Lawyer
   2. ______ Welfare worker for a city government
   3. ______ United States representative in Congress
   4. ______ Corporal in the Army
   5. ______ United States Supreme Court Justice
   6. ______ Night watchman
   7. ______ Sociologist
   8. ______ Policeman
   9. ______ County agricultural agent
   10. ______ Filling station attendant

5. Of the jobs listed in this question, which ONE would you most like to see him have if he were FREE TO CHOOSE ANY of them he wished when his SCHOOLING IS OVER?
   1. ______ Member of the board of directors of a large corporation
   2. ______ Undertaker
   3. ______ Banker
   4. ______ Machine operator in a factory
   5. ______ Physician (doctor)
   6. ______ Clothes presser in a laundry
   7. ______ Accountant for a large business
   8. ______ Railroad conductor
   9. ______ Railroad engineer
   10. ______ Singer in a night club

6. Of the jobs listed in this question which is the BEST ONE you are REALLY SURE HE CAN GET when his SCHOOLING IS OVER?

1. _____ Nuclear physicist
2. _____ Reporter for a daily newspaper
3. _____ County judge
4. _____ Barber
5. _____ State governor
6. _____ Soda fountain clerk
7. _____ Biologist
8. _____ Mail carrier
9. _____ Official of an international labor union
10. _____ Farm hand

7. Of the jobs listed in this question, which ONE would you most like to see him have if he were FREE TO CHOOSE ANY of them he wished when his SCHOOLING IS OVER?

1. _____ Psychologist
2. _____ Manager of a small store in a city
3. _____ Head of a department in state government
4. _____ Clerk in a store
5. _____ Cabinet member in the federal government
6. _____ Janitor
7. _____ Musician in a symphony orchestra
8. _____ Carpenter
9. _____ Radio announcer
10. _____ Coal miner

8. Of the jobs listed in this question, which is the BEST ONE you are sure he can get by the time he is 30 YEARS OLD?

1. _____ Civil engineer
2. _____ Bookkeeper
3. _____ Minister or Priest
4. _____ Streetcar motorman or city bus driver
5. _____ Diplomat in the United States Foreign Service
6. _____ Share cropper (one who owns no livestock or farm machinery, and does not manage the farm)
7. _____ Author of novels
8. _____ Plumber
9. _____ Newspaper columnist
10. _____ Taxi driver

9. Of the jobs listed in this question, which ONE would you like to see him have when he is 30 YEARS OLD, if he were FREE TO CHOOSE ANY of them he wished?

1. _____ Airline pilot
2. _____ Insurance agent
3. _____ Architect
4. _____ Milk route man
5. _____ Mayor of a large city
6. _____ Garbage collector
7. _____ Captain in the Army
8. _____ Garage mechanic
9. _____ Owner-operator of a printing shop
10. _____ Railroad section hand

10. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE HE CAN HAVE BY the time he is 30 YEARS OLD?

1. _____ Artist who paints pictures that are exhibited in galleries
2. _____ Traveling salesman for a wholesale concern
3. _____ Chemist
4. _____ Truck driver
5. _____ College professor
6. _____ Street sweeper
7. _____ Building contractor
8. _____ Local official of a labor union
9. _____ Electrician
10. _____ Restaurant waiter

11. Of the jobs listed in this question, which ONE would you like to see him have when he is 30 YEARS OLD, if he were FREE TO HAVE ANY of them he wished?

1. _____ Owner of a factory that employs about 100 people
2. _____ Playground director
3. _____ Dentist
4. _____ Lumberjack
5. _____ Scientist
6. _____ Shoeshiner
7. _____ Public school teacher
8. _____ Owner-operator of a lunch stand
9. _____ Trained machinist
10. _____ Dock worker

INSTRUCTIONS:

The following questions are about ______________________. Please answer them to the best of your ability, EVEN IF YOU MUST GUESS.

12. How much education would you like to see him have if NOTHING prevented him (or her) from having AS MUCH AS HE (OR SHE) WANTED?

1. _____ Less than a high school education
2. _____ Graduate from high school
3. _____ Graduate from a Vocational-Technical school or business school
4. _____ Some college, but will not graduate.
5. _____ Graduate from college and receive a B.A. degree
6. _____ Graduate from college and go on and receive a Masters degree
7. _____ Receive a professional degree (Ph.D., Doctor, Lawyer)

13. How much education do you think he (or she) REALLY WILL GET? (Check one answer)

1. _____ Less than high school education
2. _____ Graduate from high school
3. _____ Graduate from a Vocational-Technical school or business school
4. _____ Some college, but will not graduate
5. _____ Graduate from college and receive a B.A. degree
6. _____ Graduate from college and go on and receive a Masters degree
7. _____ Receive a professional degree (Ph.D., Doctor, Lawyer)

INSTRUCTIONS

There are several suggested job descriptions for each occupation listed below. Please indicate which job description best fits each job. Read all of the possible answers before you circle the number of your choice. Do not mark in "code" column.

CODE QUESTIONS

14. Hospital orderly

1. helps to take care of hospital patients
2. orders food and other supplies for hospital kitchens
3. works at hospital desk where patients check in
4. don't know

15. Machinist

1. makes adjustments on automobile, airplane, and tractor engines
2. repairs electrical equipment
3. sets up and operates metal lathes, shapers, grinders, buffers, etc.
4. don't know

16. Acetylene welder

1. builds wooden crates to hold tanks of acetylene gas
2. uses a gas torch to cut metal or join pieces of metal together
3. operates a machine that stitches the soles to the upper parts of shoes
4. don't know

17. Stationary engineer

1. works at a desk, making drawings and solving engineering problems
2. drives a locomotive that moves cars around in a freight yard
3. operates and maintains such equipment as steam boilers and generators
4. don't know

18. Statistical clerk

1. makes calculations with an adding machine or a calculator
2. sells various kinds of office machines and office supplies
3. collects tickets at sports events and other types of entertainment
4. don't know

19. Fork lift operator

1. operates a machine that makes a certain kind of agricultural tool
2. operates a freight elevator in a warehouse or factory
3. drives an electrical or gas powered machine to move material in a warehouse or factory
4. don't know

20. Economist

1. prepares menus in a hospital, hotel, or other such establishment
2. does research on such matters as general business conditions, unemployment, etc.
3. assists a chemist in developing chemical formulas
4. don't know

21. Medical illustrator

1. hands tools and equipment to a surgeon during an operation
2. demonstrates the use of various types of medicines
3. draws pictures that are used to teach anatomy and surgical operating procedures
4. don't know

22. Draftsman

1. makes scale drawings of products or equipment for engineering or manufacturing purposes
2. mixes and serves drinks in a bar or tavern
3. pushes or pulls a cart in a factory or warehouse
4. don't know

23. Social worker

1. works for a welfare agency and helps people with various types of problems they may hav
2. conducts research on life in primitive societies
3. writes newspaper stories on marriages, engagements, births, and similar events
4. don't know

INSTRUCTIONS

Indicate how much regular schooling you think is required for each of the occupations below by placing an "X" in the appropriate column. Do not mark in "code" column.

CODE	OCCUPATION	Less than a high school diploma	High school diploma	Some College	College degree	Don't know
	24. Hospital orderly					
	25. Machinist					
	26. Acetylene welder					
	27. Stationary engineer					
	28. Statistical clerk					
	29. Fork lift operator					
	30. Economist					
	31. Medical illustrator					
	32. Draftsman					
	33. Social worker					

INSTRUCTIONS

Below are a number of pairs of jobs. Indicate which job in each pair you think pays the most money. If you think the 1st job pays more, circle "a". If you think the second job pays more, circle "b". If you don't know, circle "c". Do not mark in "code" column.

CODE	QUESTIONS			
	34.	a. automobile mechanic	b. electrician	c. don't know
	35.	a. medical doctor	b. lawyer	c. don't know
	36.	a. aeronautical engineer	b. medical doctor	c. don't know
	37.	a. truck driver	b. grocery store clerk	c. don't know
	38.	a. steel mill unskilled laborer	b. shoe factory unskilled laborer	c. don't know
	39.	a. lawyer	b. high school teacher	c. don't know
	40.	a. high school teacher	b. janitor	c. don't know
	41.	a. janitor	b. policeman	c. don't know

For Mother or Female Guardian

PID-II

Section I

GENERAL INSTRUCTIONS

The Center for Vocational Education at The Ohio State University is trying to find out what students think about occupations and education. In order to have a successful study we need the aid and cooperation of the parents or guardians of the students who are participating in this study. Your son has been randomly selected to participate in this study. We would greatly appreciate it if you would take the time to complete this questionnaire.

None of the questions you are being asked to answer have "right" or "wrong" answers. We want to know your own personal opinions. It is important that you answer all questions as best you can, EVEN IF YOU HAVE TO GUESS.

No one will see your specific answers. Special safeguards have been established to make sure that your replies will be kept strictly confidential. However, if you feel that any question is improper, please feel free to skip that specific item.*

PLEASE NOTE: If you have any problems or questions concerning the questionnaire, call the following numbers between 9:00 a.m. and 10:30 p.m. and a researcher will assist you.

A. ________________

B. ________________

C. ________________

*After reading the above instructions, please sign your name.

____ Thank You.

1. Race: a) White b) Black c) Oriental d) Spanish e) Other

2. What is your occupation? (specify the kind of work you do - if you are unemployed, retired or a housewife indicate the last job you held)

____

3. How much schooling did you complete?

a) none
b) 1st - 5th grades
c) 6th grade
d) 7th - 9th grades
e) 10th grade
f) 11th grade
g) Graduated from high school
h) Vocational or business school training but did not graduate
i) Some college but did not graduate
j) Graduated from vocational or business school
k) Graduated from college
l) Graduate school but no advanced degree
m) Masters degree
n) Graduate school after masters degree but no doctorate
o) Doctorate or equivalent degree (M.D., D.D., Ph.D., etc.)

INSTRUCTIONS:

This set of questions concerns your interest in different kinds of jobs for ___________ ______________________

There are eight questions. You are to check ONE job in EACH question. Make sure it is the BEST ANSWER you can give to this question.

Read each question carefully. They are all different. Do not omit any, EVEN IF YOU MUST GUESS.

4. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE HE CAN GET when his SCHOOLING IS OVER?

1. _____ Lawyer
2. _____ Welfare worker for a city government
3. _____ United States representative in Congress
4. _____ Corporal in the Army
5. _____ United States Supreme Court Justice
6. _____ Night watchman
7. _____ Sociologist
8. _____ Policeman
9. _____ County agricultural agent
10. _____ Filling station attendant

5. Of the jobs listed in this question, which ONE would you most like to see him have if he were FREE TO CHOOSE ANY of them he wished when his SCHOOLING IS OVER?

1. _____ Member of the board of directors of a large corporation
2. _____ Undertaker
3. _____ Banker
4. _____ Machine operator in a factory
5. _____ Physician (doctor)
6. _____ Clothes presser in a laundry
7. _____ Accountant for a large business
8. _____ Railroad conductor
9. _____ Railroad engineer
10. _____ Singer in a night club

GET when his SCHOOLING IS OVER?

1. _____ Nuclear physicist
2. _____ Reporter for a daily newspaper
3. _____ County judge
4. _____ Barber
5. _____ State governor
6. _____ Soda fountain clerk
7. _____ Biologist
8. _____ Mail carrier
9. _____ Official of an international labor union
10. _____ Farm hand

7. Of the jobs listed in this question, which ONE would you most like to see him have if he were FREE TO CHOOSE ANY of them he wished when his SCHOOLING IS OVER?

1. _____ Psychologist
2. _____ Manager of a small store in a city
3. _____ Head of a department in state government
4. _____ Clerk in a store
5. _____ Cabinet member in the federal government
6. _____ Janitor
7. _____ Musician in a symphony orchestra
8. _____ Carpenter
9. _____ Radio announcer
10. _____ Coal miner

8. Of the jobs listed in this question, which is the BEST ONE you are sure he can get by the time he is 30 YEARS OLD?

1. _____ Civil engineer
2. _____ Bookkeeper
3. _____ Minister or Priest
4. _____ Streetcar motorman or city bus driver
5. _____ Diplomat in the United States Foreign Service
6. _____ Share cropper (one who owns no livestock or farm machinery, and does not manage the farm)
7. _____ Author of novels
8. _____ Plumber
9. _____ Newspaper columnist
10. _____ Taxi driver

9. Of the jobs listed in this question, which ONE would you like to see him have when he is 30 YEARS OLD, if he were FREE TO CHOOSE ANY of them he wished?

1. _____ Airline pilot
2. _____ Insurance agent
3. _____ Architect
4. _____ Milk route man
5. _____ Mayor of a large city
6. _____ Garbage collector
7. _____ Captain in the Army
8. _____ Garage mechanic
9. _____ Owner-operator of a printing shop
10. _____ Railroad section hand

10. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE HE CAN HAVE BY the time he is 30 YEARS OLD?

1. _____ Artist who paints pictures that are exhibited in galleries
2. _____ Traveling salesman for a wholesale concern
3. _____ Chemist
4. _____ Truck driver
5. _____ College professor
6. _____ Street sweeper
7. _____ Building contractor
8. _____ Local official of a labor union
9. _____ Electrician
10. _____ Restaurant waiter

11. Of the jobs listed in this question, which ONE would you like to see him have when he is 30 YEARS OLD, if he were FREE TO HAVE ANY of them he wished?

1. _____ Owner of a factory that employs about 100 people
2. _____ Playground director
3. _____ Dentist
4. _____ Lumberjack
5. _____ Scientist
6. _____ Shoeshiner
7. _____ Public school teacher
8. _____ Owner-operator of a lunch stand
9. _____ Trained machinist
10. _____ Dock worker

INSTRUCTIONS:

The following questions are about ______________________________. Please answer them to the best of your ability, EVEN IF YOU MUST GUESS.

12. How much education would you like to see him have if NOTHING prevented him (or her) from having AS MUCH AS HE (OR SHE) WANTED?

1. _____ Less than a high school education
2. _____ Graduate from high school
3. _____ Graduate from a Vocational-Technical school or business school
4. _____ Some college, but will not graduate.
5. _____ Graduate from college and receive a B.A. degree
6. _____ Graduate from college and go on and receive a Masters degree
7. _____ Receive a professional degree (Ph.D., Doctor, Lawyer)

13. How much education do you think he (or she) REALLY WILL GET? (Check one answer)

1. _____ Less than high school education
2. _____ Graduate from high school
3. _____ Graduate from a Vocational-Technical school or business school
4. _____ Some college, but will not graduate
5. _____ Graduate from college and receive a B.A. degree
6. _____ Graduate from college and go on and receive a Masters degree
7. _____ Receive a professional degree (Ph.D., Doctor, Lawyer)

INSTRUCTIONS

There are several suggested job descriptions for each occupation listed below. Please indicate which job description best fits each job. Read all of the possible answers before you circle the number of your choice. Do not mark in "code" column.

CODE	QUESTIONS
	14. Hospital orderly 1. helps to take care of hospital patients 2. orders food and other supplies for hospital kitchens 3. works at hospital desk where patients check in 4. don't know
	15. M[illegible]st 1. makes adjustments on automobile, airplane, and tractor engines 2. repairs electrical equipment 3. sets up and operates metal lathes, shapers, grinders, buffers, etc. 4. don't know
	16. Acetylene welder 1. builds wooden crates to hold tanks of acetylene gas 2. uses a gas torch to cut metal or join pieces of metal together 3. operates a machine that stitches the soles to the upper parts of shoes 4. don't know
	17. Stationary engineer 1. works at a desk, making drawings and solving engineering problems 2. drives a locomotive that moves cars around in a freight yard 3. operates and maintains such equipment as steam boilers and generators 4. don't know

18. Statistical clerk

1. makes calculations with an adding machine or a calculator
2. sells various kinds of office machines and office supplies
3. collects tickets at sports events and other types of entertainment
4. don't know

19. Fork lift operator

1. operates a machine that makes a certain kind of agricultural tool
2. operates a freight elevator in a warehouse or factory
3. drives an electrical or gas powered machine to move material in a warehouse or factory
4. don't know

20. Economist

1. prepares menus in a hospital, hotel, or other such establishment
2. does research on such matters as general business conditions, unemployment, etc.
3. assists a chemist in developing chemical formulas
4. don't know

21. Medical illustrator

1. hands tools and equipment to a surgeon during an operation
2. demonstrates the use of various types of medicines
3. draws pictures that are used to teach anatomy and surgical operating procedures
4. don't know

22. Draftsman

1. makes scale drawings of products or equipment for engineering or manufacturing purposes
2. mixes and serves drinks in a bar or tavern
3. pushes or pulls a cart in a factory or warehouse
4. don't know

23. Social worker

1. works for a welfare agency and helps people with various types of problems they may have
2. conducts research on life in primitive societies
3. writes newspaper stories on marriages, engagements, births, and similar events
4. don't know

INSTRUCTIONS

Indicate how much regular schooling you think is required for each of the occupations below by placing an "X" in the appropriate column. Do not mark in "code" column.

CODE	OCCUPATION	Less than a high school diploma	High school diploma	Some College	College degree	Don't know
	24. Hospital orderly					
	25. Machinist					
	26. Acetylene welder					
	27. Stationary engineer					
	28. Statistical clerk					
	29. Fork lift operator					
	30. Economist					
	31. Medical illustrator					
	32. Draftsman					
	33. Social worker					

INSTRUCTIONS

Below are a number of pairs of jobs. Indicate which job in each pair you think pays the most money. If you think the 1st job pays more, circle "a". If you think the second job pays more, circle "b". If you don't know, circle "c". Do not mark in "code" column.

CODE	QUESTIONS			
	34.	a. automobile mechanic	b. electrician	c. don't know
	35.	a. medical doctor	b. lawyer	c. don't know
	36.	a. aeronautical engineer	b. medical doctor	c. don't know
	37.	a. truck driver	b. grocery store clerk	c. don't know
	38.	a. steel mill unskilled laborer	b. shoe factory unskilled laborer	c. don't know
	39.	a. lawyer	b. high school teacher	c. don't know
	40.	a. high school teacher	b. janitor	c. don't know
	41.	a. janitor	b. policeman	c. don't know

cept the research staff. Please answer each of the following questions to the best of your ability. Do not mark in "code" column.

DDP

CODE	QUESTIONS
	1. Date of birth ____________ Age ________ day month year
	2. Sex: a) Male b) Female
	3. Race: a) White b) Black c) Oriental d) Spanish e) Other
	4. At this time you are: a) employed b) unemployed c) retired d) a housewife
	5. What is your occupation? (specify the kind of work you do - if you are unemployed, retired or a housewife indicate the last job you held) ____________
	6. Who do you work for? a) self employed b) private employer c) military d) federal government e) state government f) local government
	7. How long have you worked at your present job? a) less than one year b) 1 - 2 years c) 3 - 5 years d) 6 - 10 years e) 11 - 20 years f) more than 20 years
	8. How long have you had the same occupation? a) less than one year b) 1 - 2 years c) 3 - 5 years d) 6 - 10 years e) 11 - 20 years f) more than 20 years
	9. Do you hold more than one job at this time? a) yes b) no
	10. If you hold more than one job, please specify what you do at each of them. a) ____________ b) ____________ c) ____________
	11. How much schooling did you complete? a) none b) 1st - 5th grades c) 6th grade d) 7th - 9th grades e) 10th grade f) 11th grade g) Graduated from high school h) Vocational or business school training but did not graduate i) Some college but did not graduate j) Graduated from vocational or business school k) Graduated from college l) Graduate school but no advanced degree m) Masters degree n) Graduate school after masters degree but no doctorate o) Doctorate or equivalent degree (M.D., D.D., Ph.D., etc.)

INSTRUCTIONS

This set of questions concerns your interest in different kinds of jobs for ____

There are eight questions. You are to check ONE job in EACH question. Make sure it is the BEST ANSWER you can give to this question.

Read each question carefully. They are all different. Do not omit any, EVEN IF YOU MUST GUESS.

1. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE HE CAN GET when his SCHOOLING IS OVER?

    1. _____ Lawyer
    2. _____ Welfare worker for a city government
    3. _____ United States representative in Congress
    4. _____ Corporal in the Army
    5. _____ United States Supreme Court Justice
    6. _____ Night watchman
    7. _____ Sociologist
    8. _____ Policeman
    9. _____ County agricultural agent
    10. _____ Filling station attendant

2. Of the jobs listed in this question, which ONE would you most like to see him have if he were FREE TO CHOOSE ANY of them he wished when his SCHOOLING IS OVER?

    1. _____ Member of the board of directors of a large corporation
    2. _____ Undertaker
    3. _____ Banker
    4. _____ Machine operator in a factory
    5. _____ Physician (doctor)
    6. _____ Clothes presser in a laundry
    7. _____ Accountant for a large business
    8. _____ Railroad conductor
    9. _____ Railroad engineer
    10. _____ Singer in a night club

3. Of the jobs listed in this question which is the BEST ONE you are REALLY SURE HE CAN GET when his SCHOOLING IS OVER?

    1. _____ Nuclear physicist
    2. _____ Reporter for a daily newspaper
    3. _____ County judge
    4. _____ Barber
    5. _____ State governor
    6. _____ Soda fountain clerk
    7. _____ Biologist
    8. _____ Mail carrier
    9. _____ Official of an international labor union
    10. _____ Farm hand

4. Of the jobs listed in this question, which ONE would you most like to see him have if he were FREE TO CHOOSE ANY of them he wished when his SCHOOLING IS OVER?

    1. _____ Psychologist
    2. _____ Manager of a small store in a city
    3. _____ Head of a department in state government
    4. _____ Clerk in a store
    5. _____ Cabinet member in the federal government
    6. _____ Janitor
    7. _____ Musician in a symphony orchestra
    8. _____ Carpenter
    9. _____ Radio announcer
    10. _____ Coal miner

5. Of the jobs listed in this question, which is the BEST ONE you are sure he can get by the time he is 30 YEARS OLD?

1. _____ Civil engineer
2. _____ Bookkeeper
3. _____ Minister or Priest
4. _____ Streetcar motorman or city bus driver
5. _____ Diplomat in the United States Foreign Service
6. _____ Share cropper (one who owns no livestock or farm machinery, and does not manage the farm)
7. _____ Author of novels
8. _____ Plumber
9. _____ Newspaper columnist
10. _____ Taxi driver

6. Of the jobs listed in this question, which ONE would you like to see him have when he is 30 YEARS OLD, if he were FREE TO CHOOSE ANY of them he wished?

1. _____ Airline pilot
2. _____ Insurance agent
3. _____ Architect
4. _____ Milk route man
5. _____ Mayor of a large city
6. _____ Garbage collector
7. _____ Captain in the Army
8. _____ Garage mechanic
9. _____ Owner-operator of a printing shop
10. _____ Railroad section hand

7. Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE HE CAN HAVE BY the time he is 30 YEARS OLD?

1. _____ Artist who paints pictures that are exhibited in galleries
2. _____ Traveling salesman for a wholesale concern
3. _____ Chemist
4. _____ Truck driver
5. _____ College professor
6. _____ Street sweeper
7. _____ Building contractor
8. _____ Local official of a labor union
9. _____ Electrician
10. _____ Restaurant waiter

8. Of the jobs listed in this question, which ONE would you like to see him have when he is 30 YEARS OLD, if he were FREE TO HAVE ANY of them he wished?

1. _____ Owner of a factory that employs about 100 people
2. _____ Playground director
3. _____ Dentist
4. _____ Lumberjack
5. _____ Scientist
6. _____ Shoeshiner
7. _____ Public school teacher
8. _____ Owner-operator of a lunch stand
9. _____ Trained machinist
10. _____ Dock worker

EDS INSTRUCTIONS

The following questions are about ____________________. Please answer them to the best of your ability, EVEN IF YOU MUST GUESS.

1. How much education would you like to see him have if NOTHING prevented him (or her) from having AS MUCH AS HE (OR SHE) WANTED? (Check one answer).

___ 1. Less than a high school education
___ 2. Graduate from high school
___ 3. Graduate from a Vocationa-Technical school or business school
___ 4. Some college, but will not graduate
___ 5. Graduate from college and receive a B.A. degree
___ 6. Graduate from college and go on and receive a Masters degree
___ 7. Receive a professional degree (Ph.D., Doctor, Lawyer, etc.)

2. How much education do you think he (or she) REALLY WILL GET? (Check one answer).

___ 1. Less than a high school education
___ 2. Graduate from high school
___ 3. Graduate from a Vocational-Technical school or business school
___ 4. Some college, but will not graduate
___ 5. Graduate from college and receive a B.A. degree
___ 6. Graduate from college and go on and receive a Masters degree
___ 7. Receive a professional degree (Ph.D, Doctor, Lawyer, etc.)

The following questions refer to your opinion about education. Please answer both questions, EVEN IF YOU HAVE TO GUESS.

3. If you were a high school student, how much education would you like to have if nothing prevented you from getting as much as you wanted? (Check one answer).

___ 1. I would quit high school
___ 2. I would graduate from high school
___ 3. I would go to a vocational, business, secretarial, or nursing school.
___ 4. I would go to college and receive a degree (B.A.)
___ 5. I would go to college and receive a Masters degree
___ 6. I would get a professional degree in college (Doctor, Lawyer, or Ph.D., etc.)

4. If you were a high school student, how much education do you think you really could get? (Check one answer).

___ 1. I would quit high school
___ 2. I would graduate from high school
___ 3. I would go to a vocational, business, secretarial, or nursing school
___ 4. I would go to college and receive a degree (B.A.)
___ 5. I would go to college and receive a Masters degree
___ 6. I would get a professional degree in college (Doctor, Lawyer, or Ph.D., etc.)

Educational Definers for Self and Object

INSTRUCTIONS

Section One

I. We would like to know what your future educational plans are. Read each of the following questions carefully and answer honestly. Any information you give on this or any other questionnaire will be kept confidential. If you do not understand a question, raise your hand and a research worker will assist you.

1. If you were completely free to get any amount of education you wanted, how much would you get? (Circle one answer)

   1. I would not go to school at all.
   2. 1st grade
   3. 2nd grade
   4. 3rd grade
   5. 4th grade
   6. 5th grade
   7. 6th grade
   8. 7th grade
   9. 8th grade
   10. 9th grade
   11. 10th grade
   12. 11th grade
   13. graduate from high school
   14. some vocational-technical education
   15. graduate from vocational-technical school
   16. some college
   17. graduate from college (B.A., B.S.)
   18. some graduate school
   19. Master's degree (M.A., M.S.)
   20. some graduate school after the master's degree
   21. doctorate or equivalent degree (Ph.D., M.D., O.D.)

2. Considering the amount of education you desire how much will you actually try to get? (Circle one answer)

   1. I would not go to school at all
   2. 1st grade
   3. 2nd grade
   4. 3rd grade
   5. 4th grade
   6. 5th grade
   7. 6th grade
   8. 7th grade
   9. 8th grade
   10. 9th grade
   11. 10th grade
   12. 11th grade
   13. graduate from high school
   14. some vocational-technical education
   15. graduate from vocational-technical school
   16. some college
   17. graduate from college (B.A., B.S.)
   18. some graduate school
   19. Master's degree (M.A., M.S.)
   20. some graduate school after the master's degree
   21. doctorate or equivalent degree (Ph.D., M.D., O.D.)

3. Sometimes we cannot get what we want. Taking everything into consideration (your abilities, money available, etc.) how much education do you really expect to get? (Circle one answer)

   1. I would not go to school at all
   2. 1st grade
   3. 2nd grade
   4. 3rd garde
   5. 4th grade
   6. 5th grade
   7. 6th grade
   8. 7th grade
   9. 8th grade
   10. 9th grade
   11. 10th grade
   12. 11th grade
   13. graduate from high school
   14. some vocational-technical education
   15. graduate from vocational-technical school
   16. some college
   17. graduate from college (B.A., B.S.)
   18. some graduate school
   19. Master's degree (M.A., M.S.)
   20. some graduate school after the master'h degree
   21. doctorate or equivalent degree (Ph.D., M.D., O.D.)

INSTRUCTIONS: Place an "X" in the appropriate column

CODE	QUESTION	Strongly discouraged me from going to college	Discouraged me from going to college	Has not influenced me one way or the other concerning going to college	Encouraged me to go to college	Strongly encouraged me to go to college
	4. In general, my father has:					
	5. In general, my mother has:					
	6. In general, my relatives other than parents have:					
	7. In general, my teachers have:					
	8. In general, my friends have:					
	9. In general, my guidance counselor has:					

CODE	QUESTION	Strongly discouraged me from going to a vocational-technical school	Discouraged me from going to a vocational-technical school	Has not influenced me one way or the other concerning going to a vocational-technical school	Encouraged me to go to a vocational-technical school	Strongly encouraged me to go to a vocational-technical school
	10. In general, my father has:					
	11. In general, my mother has:					
	12. In general, my relatives other than parents have:					
	13. In general, my teachers have:					
	14. In general, my friends have:					
	15. In general, my guidance counselor has:					

INSTRUCTIONS

Section Two

Think of the 10 people who are most important in influencing your educational plans. They could be your parents, teachers, relatives, friends, or anyone who has talked to you about education.

List the most influential person first, the next most influential person second, and so on until the tenth person is listed. You do not have to list ten people if you do not know that many.

Most influential ________________________________

2nd most influential ________________________________

3rd most influential ________________________________

4th most influential ________________________________

5th most influential ________________________________

6th most influential ________________________________

7th most influential ________________________________

8th most influential ________________________________

9th most influential ________________________________

10th most influential ________________________________

Check your list to make sure the persons are listed in the correct order. The most influential first and the least influential last.

Section three

We would like to know how these people influence your educational plans. To aid you in answering the questions that follow, some terms will be defined by providing examples of their meaning.

KIND OF SCHOOL WORK: reading, writing, thinking, using the library to write reports, etc.

CONDITIONS under which students live and work: living in dorms, having control over one's time schedule, school related social activities, etc.

INDIVIDUAL DEVELOPMENT: improve thinking ability, gain new knowledge, acquire new skills, etc.

BENEFITS of higher education: getting a better job, getting higher pay, getting greater respect, etc.

INSTRUCTIONS

1. On the top of the next page write the name, address, phone number, occupation, and relationship of the first person on your list. (phone books are available)
2. Answer the 11 questions on the page about this person by placing an "X" in the appropriate column.
3. Do the same for every other person on your list on the following pages.

EXAMPLE

Name of the 1st person on your list John Davis

Address 448 N. Kent Street

Phone Number 268-4444

Occupation Truck Driver

Relationship to you my uncle

CODE	QUESTION	Never 1	A Few Times 2	Often 3	Very Often 4
☒	a. How often has this individual talked to you about the kind of school work that students in higher education do?			X	

The above example shows that the student's uncle, John Davis, has the most important influence on the student's educational plans (because he was 1st on the list) and that he has talked often about kinds of school work with the student.

NAME OF THE 1st PERSON ON YOUR LIST ______________________________

ADDRESS ______________________________

PHONE NUMBER ______________________________

OCCUPATION ______________________________

RELATIONSHIP TO YOU ______________________________

CODE	QUESTIONS Do not mark in the "code" column	NEVER 1	A FEW TIMES 2	OFTEN 3	VERY OFTEN 4
	1. How often has this individual talked to you about the kind of school work that students in higher education do? (Circle one number).				
	2. How often has this person talked to you about whether you can or cannot do school work beyond the high school level?				
	3. How often has this individual talked to you about the conditions under which students live and work?				
	4. How often has this person talked to you about whether or not you would enjoy the conditions under which students in live and work?				
	5. How often has this person talked to you about the individual development that students in higher education experience?				
	6. How often has this person talked to you about whether or not you can experience personal development through training beyond high school.				
	7. How often has this person talked to you about the benefits that higher education provides?				
	8. How often has this person talked to you about the benefits that you can expect as a result of training after high school?				

CODE	QUESTION	VERY BAD INFLUENCE -2	BAD INFLUENCE -1	NO INFLUENCE AT ALL 0	GOOD INFLUENCE 1	VERY GOOD INFLUENCE 2
	9. What kind of influence is this person on you regarding your educational plans?					

CODE	QUESTION	NOT AT ALL 1	A LITTLE 2	AN AVERAGE AMOUNT 3	ALOT 4
	10. How much do you like this person?				

EMSO

Educational Model for Self and Object

Section One

INSTRUCTIONS

A. Think of 10 people that you know personally or know about who have completed some educational training beyond high school. These people can be your relatives, friends, or people on TV, radio, movies, and so on.

B. List these people in order so that the person with the education that you want most is first, the person with the education that would be your second choice is second, and so on.

1. Person with the education that I want most ________________
2. Person with my 2nd choice education ________________
3. Person with my 3rd choice education ________________
4. Person with my 4th choice education ________________
5. Person with my 5th choice education ________________
6. Person with my 6th choice education ________________
7. Person with my 7th choice education ________________
8. Person with my 8th choice education ________________
9. Person with my 9th choice education ________________
10. Person with my 10th choice education ________________

Check your list to make sure the persons are listed in the correct order. The person with the education that you want most should be first and person with the education that you want least should be last.

Section two

We would like to know how these people influence your educational plans. To aid you in answering the questions that follow, some terms will be defined by providing examples of their meaning.

KIND OF SCHOOL WORK: reading, writing, thinking, using the library to write reports, etc.

CONDITIONS under which students live and work: living in dorms, having control over one's time schedule, school related social activities, etc.

INDIVIDUAL DEVELOPMENT: improve thinking ability, gain new knowledge, acquire new skills etc.

BENEFITS of higher education: getting a better job, getting higher pay, getting greater respect, etc.

INSTRUCTIONS

1. On the top of the next page write the name, address, phone number, occupation, and relationship of the first person on your list. (phone books are available)
2. Answer the eleven questions on the page about this person by placing an "X" in the appropriate column.
3. Do the same for every other person on your list on the following pages.

EXAMPLE 1

10th person on your list

Name Ken Napi

Address 421 E 23rd St., Cols, Oh. 43206

Occupation High school football coach

Educational training Masters degree in physical education

Phone Number 267-2489

Does this person know you? yes

CODE	QUESTION	Yes	No
☒	1. Is this person an example of someone who experienced the work involved in education beyond high school?	X	

The first above example shows that Ken Napi has the education that the student wants least (because he is 10th on the list). Also Ken is an example of someone who experienced the work involved in education beyond high school.

EXAMPLE 2

CODE	QUESTION	Not at all important	Not too important	Somewhat important	Very important
☒	5. How important is this person as an example of someone who you are like because he/she has or does not have the skills, abilities, or desires for school?	X			

The second example shows that Ken is not at all important as an example of someone the student is like.

1st PERSON ON YOUR LIST

NAME ______________________

ADDRESS ______________________

OCCUPATION ______________________

EDUCATIONAL TRAINING ______________________

PHONE NUMBER ______________________

DOES THIS PERSON KNOW YOU ______________________

CODE	QUESTION (Do NOT mark in the "code" column)	YES	NO
	1. Is this person an example of someone who experienced the work involved in education beyond high school?		
	2. Is this person an example of someone who experienced the conditions under which students in higher education live and work?		
	3. Is this person an example of someone who developed himself through education beyond high school?		
	4. Is this person an example of someone who achieved success because of education beyond high school?		

CODE	QUESTION (Do NOT mark in the "code" column)	NOT AT ALL IMPORTANT	NOT TOO IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTAN
	5. How important is this person as an example of someone who you are like because he (she) has or does not have the skills, abilities or desires for school work beyond high school?				
	6. How important is this person as an example of someone who you are like because he (she) would or would not enjoy the conditions under which students in higher education live and work?				
	7. How important is this person as an example of someone who you are like because he (she) can or cannot experience personal development through higher education?				
	8. How important is this person as an example of someone who you are like because he (she) is able or not able to achieve success because of higher education?				

9. What kind of influence is this person on you regarding your educational plans?

-2	-1	0	1	2
Very bad influence	Bad influence	No influence	Good influence	Very good influence

10. How much do you like this person?

1	2	3	4
Not at all	A little	An average amount	A lot

ODSO

Occupational Definers for Self and Object

INSTRUCTIONS

Section One

I. We would like to know what your future job plans are. Read each of the following three questions carefully and answer honestly. Any information you give on this or any other questionnaire will be kept confidential. If you do not understand a question, raise your hand and a research worker will assist you.

1. a. If you were completely free to work at any occupation in the world, what would your lifetime job be?

Answer: ______________________________

____

b. For this job, would you be (Circle one number)

1. self employed 2. employed by someone else

2. a. Considering the job you desire, what job will you actually try to get as your lifetime work?

Answer: ______________________________

____

b. For this job, would you be (Circle one number)

1. self employed 2. employed by someone else

3. a. Sometimes we cannot get what we want. Taking everything into consideration (your abilities, interests, opportunities, available money, etc.) what job do you really expect to have most of your life?

Answer: ______________________________

____

b. For this job, would you be (Circle one number)

1. self employed 2. employed by someone else

4. In general, most of my friends are planning to work in the same or similar type of job as I have indicated in question #2 above.

a. agree b. disagree

INSTRUCTIONS

Section Two

Think of 10 people who are most important in influencing your job plans. They could be your parents, teachers, relatives, friends, or anyone who has talked to you about jobs. You do not have to list 10 people if you cannot think of that many.

List the most influential person first, the next most influential person second, and so on until the tenth person is listed.

Most influential ____________________

2nd most influential ____________________

3rd most influential ____________________

4th most influential ____________________

5th most influential ____________________

6th most influential ____________________

7th most influential ____________________

8th most influential ____________________

9th most influential ____________________

10th most influential ____________________

Check your list to make sure the persons are listed in the correct order. The most influential first and the least influential last.

INSTRUCTIONS

1. On the top of the next page write the name, address, phone number, occupation, and relationship of the first person on your list.
2. Answer the 10 questions on the next page about this person by placing an "X" in the appropriate column.
3. Do the same for every other person on your list on the following pages.

EXAMPLE

Name of the 1st person on your list Jerry Pile

Address 887 N. Stanton Road

Phone Number 481-3346

Occupation Auto mechanic

Relationship to you my cousin

CODE	QUESTION Do NOT mark in the "code" column	Never	A few times	Often	Very oft
	1. How often has this individual talked to you about the kind of work that is done on different jobs?				X

The above example shows that the student's cousin, Jerry Pile, has the most important influence on the student's job plans (because he was first on the list) and that he has talked very often about kinds of work with the student.

Section Three

We would like to know how these people influence your job plans. To aid you in answering the questions that follow, some terms will be defined by providing examples of their meaning.

a. KIND OF WORK: farming, building, writing, manufacturing, entertaining, etc.

b. WORKING CONDITIONS: working outdoors or indoors, working alone or in a group, working in warm or cool locations, etc.

c. JOB PURPOSE: entertaining people, healing people, advancing science, growing crops, investing money, providing communications, etc.

d. JOB BENEFITS: social position, salary, retirement plans, medical insurance, self enrichment, etc.

OMSO

Occupational Model for Self and Object

Section One

INSTRUCTIONS

A. Think of 10 people you know personally or know about who work in the jobs that you would like to have most. These people can be your relatives, friends, or people on TV, radio, movies, and so on.

B. List these people in order so that the person with the job that you want most is first, the person with your second choice job is second, and so on.

1. Person with the job that I want most ______________________
2. Person with my 2nd choice job ____________________________
3. Person with my 3rd choice job ____________________________
4. Person with my 4th choice job ____________________________
5. Person with my 5th choice job ____________________________
6. Person with my 6th choice job ____________________________
7. Person with my 7th choice job ____________________________
8. Person with my 8th choice job ____________________________
9. Person with my 9th choice job ____________________________
10. Person with my 10th choice job ___________________________

Check your list to make sure the persons are listed in the correct order. The person with the job that you want most is first and the person with the job that you least want is tenth.

ADDRESS: ____________________

PHONE NUMBER ____________________

OCCUPATION ____________________

RELATIONSHIP TO YOU ____________________

CODE	QUESTIONS (Do NOT mark in "code" column)	NEVER 1	A FEW TIMES 2	OFTEN 3	VERY OFTEN 4
	1. How often has this individual talked to you about the kind of work that is done on different jobs? (Circle one number)				
	2. How often has this person talked to you about the kind of work that is best for you?				
	3. How often has this person talked to you about the working conditions you might find on different jobs?				
	4. How often has this individual talked to you about the working conditions that are best for you?				
	5. How often has this individual talked to you about the purposes that various jobs serve?				
	6. How often has this person talked to you about the purposes that you should serve in your work?				
	7. How often has this person talked to you about the benefits that jobs provide?				
	8. How often has this person talked to you about the kinds of benefits that are best for you?				

CODE	QUESTIONS (Do NOT mark in "code" column)	VERY BAD INFLUENCE -2	BAD INFLUENCE -1	NO INFLUENCE AT ALL 0	GOOD INFLUENCE 1	VERY GOOD INFLUENCE 2
	9. What kind of influence is this person on you regarding your occupational plans?					

CODE	QUESTIONS (Do NOT mark in "code" column)	NOT AT ALL 1	A LITTLE 2	AN AVERAGE AMOUNT 3	ALOT 4
	10. How much do you like this person?				

We would like to know how these people influence your job plans. To aid you in answering the questions that follow, some terms will be defined by providing examples of their meaning.

1. The KIND OF WORK you do (farming, construction, typing, etc.)
2. The WORKING CONDITIONS of the job (working indoors or outdoors, with other people or by yourself).
3. The PURPOSES the job serves (helping people, growing crops, etc.)
4. The BENEFITS the job has for you (high salary, lots of free time, expense accounts, etc.)

INSTRUCTIONS

1. On the top of the next page write the name, address, phone number, occupation, and relationship of the first person on your list. (Phone books are available.)
2. Answer the 11 questions on the page about this person by placing an "X" in the appropriate column.
3. Do the same for every other person on your list on the following pages.

EXAMPLE 1

Name of first person on your list Tim Conway
Address 2140 Park Road, Col., Oh. 43101
Phone Number 488-2011
Occupation Dentist
Relationship to you My dentist
Does this person know you Yes

CODE	QUESTIONS	YES	NO
	1. Is this person an example of someone who does a particular kind of work?	X	

The first example shows that the student's dentist, Tim Conway, has the job that the student wants most (because he was first on the list). Also, Tim Conway is considered an example of someone who does a particular kind of work.

EXAMPLE 2

CODE	QUESTIONS	Not at all important	Not too important	Somewhat important	Very important
	2. How important is this person as an example of someone who you are like because he/she is doing the kind of work that you have considered?				X

The second example shows that the student's dentist is a very important example of someone who is doing the kind of work that he has considered.

1st PERSON ON YOUR LIST

NAME ______________________________

ADDRESS ______________________________

PHONE NUMBER ______________________________

OCCUPATION ______________________________

RELATIONSHIP TO YOU ______________________________

DOES THIS PERSON KNOW YOU? ______________________________

CODE	QUESTION (Do NOT mark in the "code" column)	YES	NO
	1. Is this person an example of someone who does a particular kind of work?		
	2. Is this person an example of someone who works under particular working conditions?		
	3. Is this person an example of someone who works at a job with a particular purpose?		
	4. Is this person an example of someone who gets particular benefits from his job?		

CODE	QUESTION (Do NOT mark in the "code" column)	NOT AT ALL IMPORTANT	NOT TOO IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT
	5. How important is this person as an example of someone who you are like because he (she) is doing the kind of work that you have considered?				
	6. How important is this person as an example of someone who you are like because he (she) works under conditions that you have considered?				
	7. How important is this person as an example of someone who you are like because he (she) is working at a job which serves the purposes that you have considered?				
	8. How important is this person as an example of someone who you are like because he (she) receives the benefits from his job that you have considered?				

9. What kind of influence is this person on you regarding your occupational plans?

-2	-1	0	1	2
Very bad influence	Bad influence	No influence at all	Good influence	Very good influence

10. How much do you like this person?

1	2	3	4
Not at all	A little	An average amount	A lot

APPENDIX E

STANDARDIZED PATH REGRESSIONS

Standardized Path Regressions

The process of standardizing each variable on the total sample mean and standard deviation involves the following arithmetic operations.

$$(1) \qquad u_k = (x_k - \bar{x}_k)/s_k$$

where x_k is the k-th variable in raw score form, u_k is the same variable transformed to the standardized form, $\bar{x}_k$ and s_k are the mean and standard deviation, respectively, of x_k for the total sample. It can be shown that the covariance for two variables in standardized form for a given subsample is a function of the covariances of the variables in raw-score form as follows:

$$(2) \qquad c^*(i)_{jk} = c(i)_{jk}/s_j s_k \qquad 1$$

where $c(i)_{jk}$ is the raw-data covariance for subsample i, and variables x_j and x_k, and $c^*(i)_{jk}$ is the standardized form of the same covariance. Note that the standardized covariance would turn out to be a subsample specific correlation coefficient only if the within subsample standard deviations of x_j and x_k were the same as the overall standard deviations, s_j and s_k. Let us make the following notational definitions:

C_i = an m x m matrix of unstandardized covariances for m independent variables for the i-th subsample;

c_i = an m x 1 vector of unstandardized covariances for one dependent variable paired with each of the m independent variables, for the i-th subsample;

S = an m x m diagonal matrix with the (k,k)-th diagonal entry equal to the total sample standard deviation for the k-th independent variable.

s = a scalar equal to the standard deviation of the dependent variable;

C_i^* = the matrix of standardized covariances corresponding to C_i;

c_i^* = the vector of standardized covariances corresponding to c_i;

P_i = an m x 1 vector of path-regressions (intercept excluded) for the i-th subsample;

p_i^* = the vector of standardized path-regressions corresponding to p_i.

When the method of least squares is used to estimate the path-regressions, standard computing formulas give:

$$p_i = C_i^{-1} c_i \tag{3}$$

Similarly, the standardized path-regression coefficients are calculated by:

$$p_i^* = (C_i^*)^{-1} c_i^* \tag{4}$$

2

From equation (2) it can be seen that the matrix of standardized covariances (C_i^*) can be written in terms of the matrix of unstandardized covariances and the standard deviations of the independent variables. In a similar manner, the vector of standardized covariances between the independent variables and the dependent variable (c_i^*) can be written in terms of the corresponding vector of unstandardized covariances, the diagonal matrix of standard deviations for the independent variables and the standard deviation of the dependent variable.

$$C_i^* = S^{-1} C_i S^{-1} \tag{5a}$$

$$c_i^* = S^{-1} c_i \left(\frac{1}{s}\right) \tag{5b}$$

Inserting (5) in equation (4) one finds,

$$p_i^* = \{S^{-1} C_i S^{-1}\}^{-1} \{S^{-1} c_i \left(\frac{1}{s}\right)\} \tag{6}$$

which, after simplification, becomes

$$p_i^* = \{\left(\frac{1}{s}\right) S\}\ C_i^{-1} c_i \tag{6a}$$

Substituting equation (3) into (6a) shows that the standardized path-regression coefficients for the i-th subsample (p_i^*) can be found by simply multiplying each unstandardized path-regression by the ratio of the total sample standard deviation of the independent variable to the total sample standard deviation for the dependent variable.

(7) $$p_i^* = \{(\frac{1}{s})S\}p_i$$

Written in scalar form, equation (7) becomes

(7a) $$p_{yk(i)*} = (s_k/s_y)p_{yk(i)}$$

where $p_{yk(i)}$ is the path-regression of the k-th independent variable on the dependent variable for the i-th subsample, $p_{yk(i)*}$ is the corresponding standardized path-regression, s_k and s_y are standard deviations in the total sample for the k-th independent variable and for y, respectively.

Some of the sampling properties of the standardized path-regression coefficients can be readily determined. Suppose that sample values are distinguished from population values by marking all sample statistics with a circumflex. Thus, for example, $\hat{p}_i$ is the sample estimate of p_i, etc. Let us form sample estimates of the population standardized path-regression coefficients by applying equation (7a) to the sample values, viz,

(8) $$\hat{p}_{yk(i)}^* = (\hat{s}_k/\hat{s}_y)\hat{p}_{yk(i)}$$

Taking probability limits (plim) on both sides of (8), one finds

(9) $$\text{plim } p_{yk(i)*} = \text{plim } [\hat{S}_k/\hat{S}_y)\ \hat{p}_{yk(i)}] = (s_k/s_y)\ p_{yk(i)}$$

(By Slutsky's theorem)

$$\text{plim } \hat{p}_{yk(i)*} = p_{yk(i)*}$$

The concept of probability limit refers to a constant value to which a sample statistic converges as the sample size increases.[4] Equation (9) indicates that the sample standardized path-regressions ($\hat{p}_{yk(i)*}$) are consistent estimators of the corresponding population values ($p_{yk(i)*}$), i.e., unbiased for "large" samples and convergent to the population value as sample size increases.

Since the standardized path-regression is zero only if the unstandardized path-regression is zero, a test of the null hypothesis that $P_{yk(i)} = 0$ also tests the null hypothesis that $P_{yk(i)*} = 0$.[5]

FOOTNOTES

[1] Formula (2) is a special case of the effect of linear transformations on covariances. Define

$$v_i = a_o + a_1 x_i$$

$$w_i = b_o + b_1 y_i$$

where v, w, x, y are variables and a_o, a_1, b_o, b_1 are constants. The covariance between v and w can be written in terms of the covariance between x and y:

$$\begin{aligned} c_{vw} &= \Sigma(v_i - \bar{v})(w_i - \bar{w})/N \\ &= \Sigma\{(a_o + a_1 x_i) - (a_o + a_1 \bar{x})\}\{(b_o + b_1 y) - \\ &\quad (b_o + b_1 \bar{y})\}/N \\ &= a_1 b_1 \Sigma(x_i - \bar{x})(y_i - \bar{y})/N \\ &= a_1 b_1 c_{xy} \end{aligned}$$

Setting $a_o = -\bar{x}/s_x$

$$a_1 = 1/s_x$$

$$b_o = -\bar{y}/x_y$$

$$b_1 = 1/s_y$$

and substituting into the above result yields formula (2).

[2] See, for example, Williams (1959), p. 25.

[3] See Goldberger (1964), p. 118, for a statement of Slutsky's theorem.

[4] See Goldberger (1964).

[5] If one calculates standardized values for all observations and variables according to formula (1) and applies the traditional calculating formula for a t-score to the transformed data, the t-scores so derived exactly matches those which would be calculated if unstandardized data were used.